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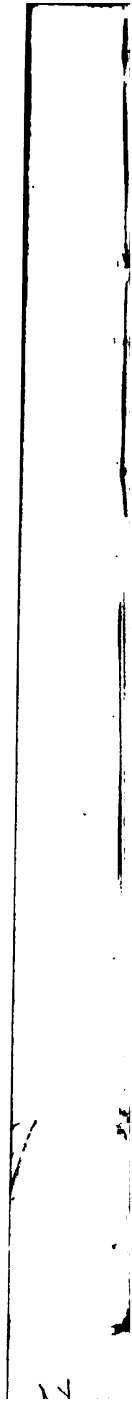


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A HISTORY  
OF THE  
PRECIOUS METALS,  
FROM THE  
EARLIEST PERIODS TO THE PRESENT TIME;  
WITH  
DIRECTIONS FOR TESTING THEIR PURITY,  
AND  
STATEMENTS OF THEIR COMPARATIVE VALUE, ESTIMATED COST,  
AND AMOUNT AT DIFFERENT PERIODS;  
TOGETHER WITH  
AN ACCOUNT OF THE PRODUCTS OF VARIOUS MINES;  
A  
HISTORY OF THE ANGLO-MEXICAN MINING COMPANIES,  
AND  
SPECULATIONS CONCERNING THE MINERAL WEALTH OF  
CALIFORNIA:

BY J. L. COMSTOCK, M. D.,  
AUTHOR OF "PHILOSOPHY," "GEOLOGY," "MINERALOGY," "CHEMISTRY," ETC.

HARTFORD:  
BELKNAP AND HAMERSLEY.

1849.



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## PREFACE.

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AT the present time, when not only the people of our country, but those of most of the civilized nations of the earth, have their attention turned to the sudden acquisition of wealth, by the extraction of the precious metals from the earth, it was thought that a history of these metals, from the period of their earliest use,—the sources whence they were obtained—their quantity and value at different periods of the world—their effects on the prices of commodities, together with their cost, and a statement of the success or fall of former mining companies, would present a mass of information which many would desire to possess, but which few among our busy population would have either the time or the means of collecting.

With respect to our sources of information, it will be seen that many authorities are quoted in the body of the work, and among them Mr.

Jacob most frequently. His "History of the Precious Metals" contains a vast amount of matter on the subject, but whether it is always to be depended on, we have in many cases no means of knowing. We have, however, depended chiefly on his authority for the financial statistics of the Romans, and of the middle ages. We have also quoted Gibbon, Brande, McCulloch, Ure, various Reviews, Humboldt, Ward, and such other authorities as we could lay our hands on.

The chapter on the use of the precious metals other than coin, is only given as an approximation to the truth, and while some friends, to whom that portion of the manuscript was shown, pronounced the estimates of some of the articles too small, others thought them too large. As to the amount for communion plate, we can only say that clergymen of the several denominations were consulted, and their opinions taken.

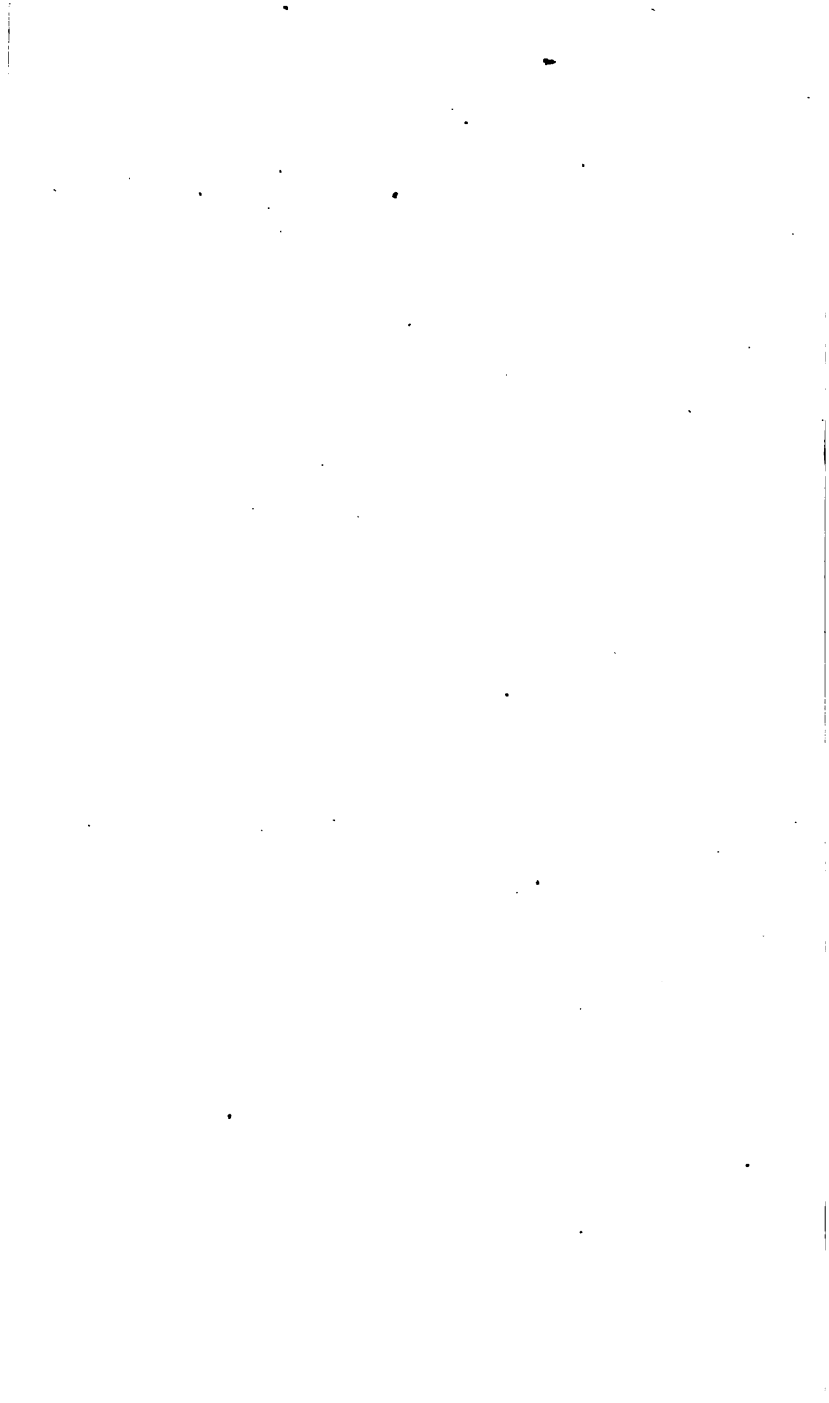
The history of the Anglo-Mexican mining companies is, perhaps, at the present day, the most important chapter in this little book. That the most sanguine expectations of vast returns were then entertained in London, is shown by

the quintuple rise of the stock. But the reader will see the result.

With respect to the estimates of advances for Californian gold, we have submitted them to several persons who are concerned in this speculation, and nearly all have thought them beneath the real amount.

As the preparation of this volume has occupied only a few weeks, it may, and probably does, contain many errors, which we shall be glad to correct on their being pointed out in a friendly manner.

HARTFORD, CONN., March, 1849.



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# HISTORY

## OF THE

# PRECIOUS METALS.

---

### CHAPTER I.

#### GENERAL ACCOUNT OF THE METALS.

THERE seems to be an instinctive love of gold and silver in our species ; hence the history of man presents more or less the history of the Precious Metals. While the savage ornaments his person with glittering coins, or plates of gold, his civilized neighbor does the same in a different form, or, perhaps, hoards his treasure to be expended in luxuries, which he deems more refined, but which are certainly much less innocent than those of the savage.

In searching for the most ancient history of the metals, we must therefore begin with the earliest records of our race, the Sacred Scriptures. Here we find that *gold, silver and copper* were already in use, either as ornaments or instruments of war. These were the first metals used, since they all occur in the native or pure state ; and hence, unlike iron and most of the other metals, they require no art in separating them from their ores. It is true that the largest proportions of



silver and copper are found combined with other substances, as sulphur and oxygen ; but they are also found in considerable quantities in the metallic form.

The quantity of iron existing in the earth is much greater than that of any, or all the other metals combined ; and, as it is the most common, so it is the most useful of all the metals ; but in consequence of its combination with other substances, its presence is only indicated by the application of some test, involving a considerable advance in the arts. Its separation and conversion into steel require still greater scientific refinement ; and hence we find that gold, silver and copper, had been in use for ages before iron was employed. Even the Egyptians, with all their learning and luxury, their refinement and skill in many of the useful arts, never discovered that of producing instruments of iron and steel. At a date so recent as the discovery of the New World, the inhabitants of many parts, though well skilled in the art of pottery, and the manufacture of gold into ornaments, still used that precious metal for fish-hooks and other common purposes, though the earth contained an abundance of the different ores of iron. This was the case with the people of Brazil and Mexico, who, on the arrival of their conquerors, were glad to exchange hooks of gold for those of steel.

The most ancient cutting instruments were formed of copper, hardened with a mixture of tin, which has been found, by recent experiments, to make instruments in hardness little short of those of steel.

The most ancient use of iron, discovered among the relics of antiquity, has been in the form of small pieces, serving as the edges of cutting instruments, set in handles of gold, silver, or copper. Swords and other weapons, as well as tools of use for domestic purposes, have been found in the mounds of Scandinavia, made in this manner—thus showing that iron was once the most precious of all the metals. These specimens, so far from proving that the art of extracting iron from its ores was known, seem, from their great value and rarity, to show the contrary; for, had this art been discovered, its uses would undoubtedly have soon led to the production of larger quantities. We must, therefore, infer that these few specimens owe their origin to the accidental discovery of meteoric iron, masses of which have been found in most parts of the world. This is always in the metallic state, though mixed with various proportions of other substances.

Mr. Prescott, in his history of Peru, says: "It is worthy of remark, that the Egyptians, the Mexicans, and the Peruvians, in their progress towards civilization, should never have detected the use of iron, which lay around them in abundance; and that they should each, without any knowledge of the other, have found a substitute for it, in such a curious combination of metals, as gave their tools almost the temper of steel—a secret that has been lost, or, to speak more correctly, has never been discovered by the civilized European."

This "combination" of metals, as above stated, is now

supposed to have been an alloy of copper and tin ; for, although the latter metal does not occur in the metallic state, still it requires much less art in its reduction than iron. We can also readily conceive how this discovery might have been made ; for, if a mass of the oxide of tin, (not an uncommon ore,) be cast upon burning coals, and in the melting state be stirred with a piece of copper, there will be formed on the latter a thin crust of alloy, which will have nearly the hardness of steel. Plumbers, who use copper soldering irons, (so called,) are aware of the hardness of the crust thus formed. after they have been used in the fusion of tin.

*Masses of Meteoric Iron in various countries.* A few instances of the discovery of meteoric iron are here recorded, for the purpose of showing that the occurrence of a few instances, or small quantities of that metal, among the relics of antiquity, do not indicate, with any certainty, that the working of iron ores was understood.

Prof. Pallas was shown, in Siberia, a mass of native or meteoric iron, weighing 1,680 pounds, and which, the inhabitants assured him, fell from the air.

A mass, in the cabinet of Vienna, came from Croatia, where it was seen to fall from the atmosphere in the form of a ball of fire.

Don Rubin de Celis describes a mass of the same metal at Tucuman, in South America, which weighed 30,000 pounds.

A mass, now in the cabinet at New Haven, Connecticut, was found near Red River, in Louisiana. It

is very compact and malleable, and weighs 3,000 pounds. Capt. Ross describes a similar mass in West Greenland, of which the Esquimaux manufactured several knives.

In all these, and in many other instances, where such masses have been analyzed, they have been found, without exception, to contain a small per centage of nickel—a peculiarity of composition which indicates the identity of their origin.

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## CHAPTER II.

### GENERAL ACCOUNT OF GOLD.

PERSONS having no knowledge of Mineralogy, have often made their fortunes, in prospect, by the discovery of yellow, glittering, metallic particles, either in the fragments of a broken rock, or in the loose sand of a river. The writer remembers an instance where an honest farmer kept such a discovery a profound secret for years, not doubting that the little cubes of sulphuret of iron were pure gold, and, consequently, that his fortune was secure whenever he should choose to make use of his concealed treasure. Of course his chagrin could only have been equalled by his hopes, when told that his gold was nothing but a mixture of iron and sulphur, and entirely worthless.

The sulphurets of iron and copper, known under the names of iron and copper *pyrites*, are found of a yellow color and brilliant metallic lustre, which does not tarnish by exposure to the air; nor are they, in this state, soluble in any acid.

*Chemical and Distinctive Characters.* These two compounds of copper and iron have often, (in the ardor people have for finding gold,) been mistaken for that metal. But, to an experienced eye, both the color and form will always prevent such a deception. But where such experience does not exist, a few simple tests will dispel such a delusion. The compounds in question are readily reduced to powder under the hammer; and if submitted to the flame of the blowpipe on charcoal, or heated to redness in a coal fire, they both emit the odor of sulphur—the iron becoming magnetic, and the copper soluble in an acid. None of these characters, as we shall see directly, belong to gold.

*Forms under which Gold occurs.* Gold is found only in the native or metallic state. All the other metals, except platina, are found combined with sulphur, oxygen, carbonic acid, or some other substance by which they are said to be *mineralized*, and by which their metallic lustre is entirely destroyed. These compounds are called *ores*; and in order to separate the metals they contain, they must be submitted to various chemical manipulations, according to the kind of metal and the substances with which they are combined.

On the contrary, gold is found only in the metallic or

brilliant state, and hence an *ore* of gold has never been found, nor can such a compound occur, since no natural process is sufficient to overcome its resistance to a combination with any of the elements with which it is associated. It is true that volcanic heat may, for a time, alloy it with another metal; but the very means of producing such an effect will, if continued, purify the gold, by the oxidation and subsequent evolution of the alloying body.

Gold occurs massive; capillary or thread-like; dendritic; in scales; amorphous or shapeless; and crystallized in cubes, and in octohedrons or solids, having eight sides. It varies in color, from orange or golden yellow, to yellowish grey—the color depending, in some degree, on the metal with which it is alloyed.

Gold is seldom or never found in the perfectly pure state; but is alloyed with small proportions of other metals, the most common of which are copper and silver.

*Other Distinctive Characters of Gold.* The natural compounds of copper and iron, which have been mistaken for gold, are described above; they fly in pieces under a blow of the hammer. Gold, on the contrary, is always malleable, and may be drawn into thin plates under the hammer. This simple test is quite distinctive, since no other yellow metallic substance is found in the native state which can be drawn under the hammer. The chemical characters of this metal are equally distinctive, since it is only soluble in a mixture of nitric and muriatic acids, called, by the old chemists,

*aqua regia*, or *royal water*, because it dissolves the noblest of metals. This is made by mixing three parts of muriatic, or hydrochloric acid, with one of nitric. This solution stains the skin an indelible purple, and from it the metallic gold is thrown down by the green sulphate of iron, or the copperas of commerce.

*Specific Gravity.* In addition to the above simple tests of gold, its specific gravity, or even its weight in the hand, will distinguish it from all other substances, except platina. The specific gravity of native gold is from 14 to 18, according to the quantity of alloy it contains. Directions will be found in most treatises on chemistry and mineralogy for taking the specific gravity of the metals.

**GEOLOGICAL SITUATIONS OF GOLD.** In most instances gold is found either in, or in the vicinity of, primitive rocks, as granite, quartz rock, and mica slate. These rocks often contain veins of greenstone, limestone, jasper, or sulphate of barytes, in which the metal is disseminated. The metals which are most frequently found associated with gold in the form of ores, are the sulphurets of silver, copper, iron and lead, and sometimes those of antimony. The gold, although disseminated in the veins of these metals, is not combined with them, but exists in particles so small as often not to be distinguished by the eye. Hence rich mines of this metal are found to traverse mountains of granite, or to descend to considerable depths in the earth, when the ores, to the eye, exhibit no signs of their precious contents.

In other instances sandy quartz, or fine granite, presenting to the eye nothing more than a yellowish stain of the oxide of iron, still contain considerable quantities of gold.

#### METHODS OF OBTAINING THE GOLD BY SMELTING.

When the precious metal is thus disseminated, it is obtained either by smelting in a strong fire, or by amalgamation with quicksilver. In either case, the rock is first reduced to a fine powder, and washed, by which the lighter portions are separated, while the gold, by its greater specific gravity, falls to the bottom, but mixed with more or less of the sand or ores of the other metals. The matter thus obtained being melted, there falls down a button, consisting, perhaps, of several metals, from which the gold is afterwards separated. Where the gold was not visible to the eye, this appears to have been the ancient mode of obtaining it. But in the absence of chemical knowledge, it is obvious that it must have been nearly impossible to obtain the metal in any tolerable degree of purity, though, undoubtedly, in many instances, the gold was disseminated in the rock without the presence of metallic ores, in which cases, by a strong fire, the metal, in a state of considerable purity, might have been obtained.

*By Amalgamation.* Although, when the mine was rich, larger quantities of gold could be separated by smelting or fusion, yet it is also true that, with the utmost care, and even with the aid of all the arts of the present day, much was lost; and, therefore, when the



process of amalgamation was discovered, this method gradually went into disuse. Several writers on the ancient arts have asserted that quicksilver was used in the separation of gold during the times of Moses and Solomon; while others, and among them Jacob, the most elaborate writer in our language, on this subject, have found no passages, in authors of antiquity, to support such a supposition.

But at whatever period the process of amalgamation began to be employed, it is certain that it was in general use among the Spanish miners in South America in 1576; and that no other method was then considered effective, even in the working of the silver mines, is shown by the fact that the quicksilver was a government monopoly, and was delivered to the operatives only in specific quantities. This was a regulation by the Spanish government, in order to secure the tax on the silver produced—the quantity being in proportion to the quicksilver delivered.

To show the perfection of this method, it is stated that when the auriferous particles form only the 200,000th part of an ore, as that of the sulphuret of copper, such mines may still be worked to profit, when the process of amalgamation is skillfully performed.

We do not profess here to go into such a detail of the manipulations as to enable the reader to erect works for the extraction of gold from a mine, but only such as will instruct him how to make an experiment on specimens of auriferous sand, or fragments of rock, sus-

pected to contain gold, but which is not apparent to the eye.

The apparatus, for this purpose, attached to large mining establishments, either for silver or gold, is very extensive and costly; but, for the purpose in question, only a few implements, and those of the cheapest kind, are required.

In the first place, the sand or rock suspected to contain the gold is to be finely pulverized, which may be performed in a mortar of iron or stone—water being poured in repeatedly, during the trituration, and then decanted, in order to remove the lighter particles, while those containing the gold, being of greater specific gravity, will sink to the bottom of the vessel.

Having thus removed a portion of the sand and earth, that which is suspected to contain the gold is to be dried and returned to the mortar; the drying, however, is not necessary. Next, pour on a small quantity of quicksilver, and renew the trituration, adding another portion now and then, until all the stony matter, or sandy particles, has, by stirring, come into contact with the quicksilver. An hour or two is a sufficient time to determine the result.

The specific gravity of the sand being less than that of the mercury or quicksilver, this will swim on the surface, and may be removed by pouring the whole into a shallow vessel, or by straining through a piece of coarse cloth, which will retain the earthy particles, while the amalgam will pass through.

Next, place a piece of soft-dressed buckskin in a cup, and pour in a small portion of the mercury, taking care to fasten the skin very securely in the form of a bag, with many folds of a string; then, by squeezing with the hands, force the mercury through the pores of the leather, which is readily done, and what remains in the form of paste will probably be an amalgam of gold; which, on the application of heat in an iron spoon, will leave the pure metal by the evaporation of the mercury. When the gold is contained in the ores of other metals, the mass is first roasted, or submitted to a moderate heat, in the form of coarse powder, which is then pulverized and submitted to the process of amalgamation, as above described.

*Washing sand or auriferous earth for Gold.* It is obvious that this method of obtaining gold can only be employed where the particles of the metal are apparent to the eye; and, although the proof may be considered so perfectly simple as to be performed equally well by all who possess equal powers of vision, still it is well known to the trade that it is an art requiring considerable skill, and that in practice an experienced washer will often obtain twice as much gold from the same material as a new hand.

As a great proportion of the gold in possession of the ancients was certainly obtained by this method, thus requiring neither heat nor amalgamation for its extraction, it is obvious that the art of mining, as it is practiced at the present day, could have made but little

progress, so long as the surface of the earth afforded a sufficient supply of the most precious of metals. And accordingly we shall find that excavations in the earth for gold were unknown in the primitive ages, though the metal itself was in use in the earliest times of history.

It is an interesting fact, that the gold found near the surface, or in alluvial sands, is said to contain less alloy than that excavated from rocks—the alloy being destroyed by exposure. In our own country, this observation seems to be confirmed by the recent analysis of specimens from California, which, at present, are entirely of surface origin, and nearly, if not quite, equal in purity to standard gold.

Although the ancient auriferous sands, as those of Nubia, Abyssinia, Egypt and Arabia, appear to have been exhausted, yet alluvial localities of this metal still exist in several parts of Africa, Europe, Asia and America, and within the last century large proportions of the gold now in existence have been obtained from such deposits.

As washing was the most ancient method of obtaining this metal, and as this has continued to the present day to be the easiest as well as the least expensive method, we should of course suppose that the simple machinery to be employed for this purpose, would be the very best which ingenuity and experience could devise, and that the improvements of one generation or country would be transmitted and introduced into

others, whenever said machinery was required. But it does not appear that this has been the case, for we find that at the present time a variety of machines are employed for this purpose, not only in different countries, but in different parts of the same country. It is, however, hardly necessary, in so short a treatise, to occupy much space in describing these machines; we shall therefore only refer to those which are the most simple, cheap and effective.

That employed by the Bohemians and Hungarians, where surface gold has been collected for centuries, consists of a plank with twenty-four grooves cut across its surface, the sides being raised by strips of boards nailed on. A pine board, fourteen inches wide and six or eight feet long, with strips along the sides a few inches high, and pieces of thick lath nailed across the bottom, could be more easily made, and would be equally useful. This the Hungarians hold in an inclined position, and placing the sand to be washed in the upper part, they pour on water, which carries away the coarser and lighter materials, leaving the particles of gold in the transverse crevices towards the lower part of the inclined plane, mixed with various proportions of fine sand. This mixture they remove to a flat wooden basin, and by a peculiar sleight of hand, which practice only can teach, they separate the sand entirely, leaving the gold in the dish.

Another method, said to be employed with success, is to substitute a coarse cloth for the transverse grooves

of the inclined plane, which, on the application of the water, retains only the fine particles of gold and sand ; after which the cloth is removed, and these particles washed and shaken off into the shallow dish, as described above.

In several parts of South America, where surface gold has long been collected from the alluvial deposits, a method similar to that first described is employed. Mr. Mawe, in his travels to the gold regions of Brazil, has given a figure of a washer with his dish, in the act of washing ; but, as stated above, this act can only be learned by practice, and therefore we can see no advantage to the experimenter in copying the picture. In California, according to the report of Capt. Folsom, of the Quarter-master's department, the gold is separated by the washing in common tin pans, and vessels of every kind which can be substituted for them. The finest portions of the earth being separated by the water and a gyratory motion of the pan, the gravel is then removed by the hand, and the gold and fine sand left at the bottom of the vessel. This being placed on a board or cloth to dry, the sand is then blown off by the mouth or common bellows, while the greater specific gravity of the gold causes it to remain on the cloth. By this method much of the finest gold is blown off and lost. Whenever the present eagerness for the accumulation of gold subsides, these fine particles will be saved and submitted to amalgamation, by which every vestige of the precious metal will be extracted.

Capt. Folsom also states that vast numbers of rude machines, resembling nursery cradles, are also employed in this business. The rocking of the cradle answers to the gyratory motion of the pan; the water, mud and fine sand escaping from the foot of the machine over a series of small cross-bars placed on its bottom, which retain the coarse particles of the metal. "Over the head of the cradle is a coarse sieve, upon which the auriferous earth is placed, and the machine being in motion, water is poured upon the sieve, and the gold, sand and fine earthy matter, is thus taken into the body of the machine, while the gravel is rejected."

*Spurious or factitious Gold, how detected.* Although we have already described the tests by which native gold may be known from the native compounds of sulphur, iron and copper, which are of a brilliant yellow, it is, perhaps, still more important, at the present time, that the precious metal should readily be distinguished from brass imitations, which, it is said, are, or will be, offered for sale in phials as the real California metal. We cannot stop to say more on this subject than to express our belief that his majesty from below would in shame deny having ever put the idea of such a fraud into the heads of any of his mortal servants.

The method of detecting this fraud is not difficult; for, in the first place, the specific gravity of brass or copper is only half that of gold; hence the weight of the phial in the hand will instantly show the difference. But, if mixed half or two thirds gold and the remainder

brass, the difference of weight would not so readily be observed ; and if in a round green glass, or otherwise colored bottle, the variety of color between the false and true metals could not readily be seen. The remedy would therefore be, in the absence of chemical tests, to pour the contents on a sheet of paper, when the eye would instantly see the difference.

The forms of the particles, or scales, are also different ; those of the gold being irregular, but not resembling the turnings, granulations or filings of brass. It is difficult to describe in words these differences ; but the eye, at a single glance, would not fail to do so.

*Test with Acids.* The yellow sulphurets of copper and iron, as already stated, are brittle, and fly in pieces under the hammer. The imitations of gold above described, may be so prepared as to be slightly malleable, though they can never be drawn into thin plates like gold. But the most sure way of detecting this fraud is to subject the article to the test of nitric acid, or the *aqua fortis* of the shops. To do this, it is only necessary to place a small quantity of the suspected metal in a watch crystal, or on a piece of window glass or mica, and let fall on it a few drops of the acid, which, if it is gold, will have no immediate effect, while it will instantly attack the false metal, turning it black, and with the emission of red fumes, will soon destroy it entirely.

But a fraud, not so readily detected, may consist of a malleable compound of copper and other base metals, with an external covering of gold, by means of the



electro-galvanic process. In this case the quantity of gold might be very minute, but still sufficient to protect the surface from being so readily attacked by the nitric acid. To an experienced eye, this fraud would also be instantly seen; for the color of pure gold, thrown on by art, is of a deeper yellow and more brilliant than that of the native metal as it comes from the sand. In the absence of such experience, a single scale, rubbed on a whetstone or file, and then submitted to the acid, would detect the fraud as above described, as the film of gold would be rubbed off, and the base metal exposed to the action of the solvent. If a little muriatic acid be added to the nitric, this would destroy the surface gold, turning the base metal black, when the whole would be soluble in the aquafortis. In the absence of the nitric acid, the sulphuric acid, or oil of vitriol, will dissolve the brass.

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### CHAPTER III.

#### CHIEF GOLD MINES AND THEIR GEOLOGICAL SITUATIONS.

ALTHOUGH, as we have already stated, there are no gold ores, strictly speaking—that is, this metal is never mineralized with oxygen or sulphur, forming ores like other metals—still, as there are auriferous veins in rocks, which are worked partly or wholly for the gold they contain, we may, without impropriety, call such

excavation gold mines. All the mines of South America, though many of them contain greater or less proportions of gold, are called *silver* mines, because this is the metal for which they are chiefly wrought.

It is said that gold never predominates over other metals, so as to constitute the chief metallic ingredient in a vein. In primitive strata this metal exists in small grains or spangles, often visible, but frequently not to be detected without a magnifying glass, or the process of amalgamation.

But gold is much more frequently found in alluvial sands than among primitive rocks. The auriferous sands of Europe, Africa, Asia and America, are all observed to be nearly of the same colors; that is, black, brown or reddish, showing that they contain oxides of iron. This would seem to be the result of the decomposition of auriferous pyrites, though it has not been observed that iron ores of any sort still exist in the neighboring rocks from which such oxides might formerly have been derived.

The only gold mines in Europe, of any importance, are those of Transylvania and Hungary. The gold is found in veins of sulphuret of silver, of ferruginous limestone, and of sandy quartz, all penetrating primitive rocks.

But the localities of gold are by far too numerous to be mentioned here; and this will be acknowledged, when it is stated that few, if any of the metals, except iron, are so universally disseminated as gold. Our

present object must therefore be, to point out to the explorer the general characters of the countries where gold, and especially that of the surface, has been found; and, particularly to examine the question whether auriferous sands indicate, with any degree of certainty, that the metal they contain has been derived from the disintegration of rocks or mountains in the vicinity.

There is certainly a general impression, in the minds of those who have not particularly examined this subject, that alluvial gold has been, at some former period, washed down from the more elevated rocks or mountains in the vicinity; and this, no one will deny, is a fair, common-sense inference; for, if the gold and sand have not a common origin in the mountain, why are they so commonly found together?

But when we come to examine the geological localities of alluvial gold, we shall find more difficulties to decide where the precious metal comes from, than is at first imagined.

The gold which comes from Africa, in the form of dust or small particles, and which is brought from the interior in quills of the ostrich or vulture, is always found among the sands of that country, and often at great distances from any mountain. Besides, the specific gravity of this metal being at least six times greater than that of the sands in which it is found, it would seem improbable that any power of water, short of a flood, which should sweep away the hills themselves, should float the particles of gold to any great distances.

The only well grounded supposition, therefore, must be that, if the gold came from the mountains by the power of streams, it was contained in the fragments of auriferous ores or rocks, which were afterwards disintegrated by the influence of the sun and weather, thus leaving the metal wherever such decomposition was effected.

The manner in which surface gold is universally procured, is a sufficient proof that it cannot be floated along on the surface of loose sand ; for we find that the partial buoyancy of the sand by the water, and the motion thus given the coarser particles, allows those of the gold, by their greater specific weight, to fall to the bottom, and thus they are retained in the crevices of the inclined plane.

It appears, from authentic reports, that the auriferous sands of California are colored by the oxides of iron—an ingredient, as we have already stated, very common, if not universal, in gold-bearing alluvions. It might be inferred, therefore, that the precious metal in this, as well as in other similar regions, at some distant period, was carried to the plains in fragments of ferruginous rocks by mountain torrents, and that the particles of gold were subsequently liberated by the decomposition of such masses as hinted above.

This supposition being true, we should of course infer that, by following these indications to their sources, we should finally come to the rocks which formerly supplied, or, perhaps, still supply, these sands with their

precious contents, and thus detect the gold embedded in the original matrix; and, no doubt, the object is worth the experiment.

But it is a curious and unexpected circumstance in the history of gold, that its existence in the sand of a plain does not, with any degree of certainty, indicate that it is also to be found in the neighboring hills; on the contrary, we find few, if any examples recorded, where auriferous veins have been discovered by following these indications to their sources.

The ancient sources of gold in Nubia, Abyssinia, Arabia and Spain, have for ages been exhausted. These countries, as well as the Ophir of Solomon, wherever that might have been, are believed to have yielded only surface gold; for we have no accounts in the Scriptures, or in ancient authors, of any excavations into the earth for the purpose of mining for gold; nor is it believed such excavations still exist, which are proved to have been the sources whence the ancients obtained their gold. We must therefore infer that in all these cases the fixed sources from which the metal came either did not exist, or have remained to this day undiscovered.

Another difficulty on this subject arises from the fact, well known to gold searchers, that the metal is often found at or near the terminations of streams, but vanishes entirely as they ascend towards their sources. In other instances the sands have been found auriferous only in certain sections of the same valley or

water-course, though no change could be observed, either in the color or quality of the soil, or in the direction of the ancient stream by which it had been deposited.

Again, it has been found that certain river sands, descending from mountains, have afforded no gold until after their junction with other streams, or even after they have passed through lakes, where, had they been the bearers of golden treasures, they must have been deposited. Thus the river Ticino, of Italy, is said to afford no gold between its source and the lake Maggiore ; but, having passed that lake, its auriferous sands are deposited.

The banks of the Rhine also contain gold in several places ; but not a particle is found within hundreds of miles of its source: The same thing is stated of the river Ems, the sands of which afford no precious particles towards its source in the mountains, but only in the plains through which it passes to reach the Danube.

It is true, that these facts and circumstances do not prove, beyond all doubt, that no gold exists in the hills from which, to all appearance, auriferous sands have been washed ; but they certainly show that such sands are by no means sure indications that such is the case.

When the quantity of gold is found to increase, in proportion as the searcher approaches the mountains, this circumstance would seem to indicate its source ; and no one, whatever his theory might be, would probably fail to institute an examination into the secrets of such a locality.

## CHAPTER IV.

## REFINEMENT OF THE PRECIOUS METALS.

GOLD, as it is presented to us by the hand of nature, is never in a pure or refined state ; but, as we have already stated, is alloyed, or mixed, with one or more foreign metals. These are most frequently copper or silver, and sometimes both. It also sometimes contains minute portions of palladium or iron. The gold and silver of commerce, in the form of coin, always contain proportions of alloy. In gold coins this is also either silver or copper, and sometimes both. This is added in order to harden the metal, pure gold being so soft as to be easily scratched or abraded by friction, and hence, in this state, the distinctive figures impressed on the coin would not only soon become obliterated by use, but considerable portions would be lost by friction.

The color of the coin, to an experienced eye, indicates the kind of alloy it contains. When this is copper, it gives a decidedly reddish tinge to the piece ; when of silver, the coin is of a lighter color than pure gold, and when of both these metals a medium color is produced ; the three kinds being readily distinguished on comparing their colors with each other or with pure gold.

*Manner of estimating the purity of Gold.* The word *carat*, used by all refiners and dealers in gold, and by

which its degree of purity is understood, is, according to the traveler Bruce, derived from *kuara*, a small red bean, which the ancients used for a weight of gold. In weighing diamonds, the carat means a weight of 4 grains, the price being increased by multiplying the weight into itself. Thus a diamond weighing 2 carats, or 8 grains, being worth 10 dollars the carat, is worth  $2 \times 2 = 4 \times 10 = 40$  dollars, while one of 10 carats is worth  $10 \times 10 = 100 \times 10 = 1000$  dollars, and so in this proportion.

In reference to the fineness of gold, this term is used to express the relative proportions of the pure metal, and the alloy which the mass contains. At the English mint the law directs that the mixture shall consist of 11 parts by weight of gold, and 1 of copper, thus making in 24 parts, 22 of gold and 2 of copper; and this is called 22 carats fine, that is,  $\frac{22}{24}$  of gold and  $\frac{2}{24}$  alloy.

Pure gold is 24 carats fine, the alloy being reckoned of no value; and therefore if we consider each as consisting of grains, then the fineness is expressed by the number of grains of the pure gold. Thus a coin consisting of 20 grains of gold and 4 grains of copper is said to be 20 carats fine; if of 18 grains gold and 6 alloy, it is 18 carats fine, and so on in this proportion, whatever the mass or quantity may be. In the same manner the fineness or purity of silver is estimated.

*Refining Gold by Acids.* Most of the gold used by artists for gilding, galvanizing, and other purposes where the pure metal is required, is obtained from the coin of



commerce, refined by various methods. This is done by the gold-beaters, who, in this country, usually purchase doubloons, or other foreign coin, for this purpose. As this gold is seldom over 22 carats fine, and as only the metal nearly pure, or 24 carats fine, can be drawn into leaf, the 2 carats of alloy must be extracted. The reason of this is, that the admixture of any other metal renders the gold so hard and brittle that it cannot be drawn into thin leaves. There is, however, much difference in this respect, depending on the alloying metal; thus a small quantity of silver or copper, as a grain or two in 24, though it will render the leaf imperfect, does not prevent it from being drawn under the hammer; while so small a portion of lead as the 2000th part is said to render the gold so brittle as to prevent its being drawn at all.

The coin being melted, is poured, in a small stream, into cold water, which *granulates*, or divides it into thin scales. It is then placed in a proper vessel, and covered with strong hot nitric acid, which, without affecting the gold, dissolves out the alloy, whether it be silver or copper; or the acid is heated and added in small quantities until the action ceases. It is then poured off, and the gold remaining at the bottom well washed, or until the water is tasteless. If the solution is green, indicating that the alloy was copper, it is thrown away, or common salt is added to the washings, which, if it produces a white precipitate, this indicates a portion of silver, which falls down in the state of a white precipitate of that

metal, and is saved and purified. The gold which now remains at the bottom of the vessel is nearly or quite pure, and being melted and cast into ingots, is ready for use.

By the above method the metal is made sufficiently pure for the ordinary purposes of gilding, being  $23\frac{1}{2}$  or  $23\frac{3}{4}$  carats fine; the degree of purity depending on the manner of conducting the process, and especially that of granulating the coin, and the perfection with which the alloy is precipitated.

When gold of absolute purity is wanted, that which remains after the action of nitric acid, as above described, is dissolved in *aqua regia*, consisting of three parts muriatic or hydrochloric acid and one of nitric, assisted by heat. This solution is precipitated in the metallic form, by the green sulphate of iron, (the *copperas* of commerce,) and after being well washed, and melted, affords gold of great purity, being 24 carats fine.

*Refining by Cupellation.* This method, probably discovered by accident, consists in exposing the impure metal contained in a porous cup, to a melting heat, when the alloy is absorbed, while the pure metal remains in globules on the bottom of the cup. For this purpose the ashes of bones, being mixed with beer, and properly tempered, like mortar, is pressed into a mold, and dried, thus receiving and retaining their proper shape. These cupels, or cups, are placed in a shield of refractory clay, called a *muffle*, by which they are pro-

tected from the intense heat of the furnace. The impure gold, wrapped in sheet lead, is put into the cupel, and this into the muffle, and the furnace heated to the melting point of gold by means of charcoal. The door of the muffle, which is a small oven, is then opened, to let in the air, by which the lead and other base metals the gold contained are oxidated, and sink into the porous matter of the cupel, while the gold remains in a button on the surface, and on cooling of the apparatus is removed in a state of considerable purity. For this purpose it is absolutely necessary that metallic lead, to the amount of ten or twelve times the weight of the gold, should be employed; and this, during fusion, seems to select from the pure or noble metals all the alloy they contain, and with these base mixtures, (the very purpose for which the lead is added,) sinks with them into the substance of the cupel, while their more precious associates, gold and silver, (if the coin contains the latter,) remain on the surface in fixed buttons or globules.

In this manner gold and silver are separated from all the other metals, but not from each other. When cupellation is employed as an assay, or test of the purity of gold, the coin or mass is first weighed, and having been submitted to the process, is again weighed, and the loss will show the per centage of alloys.

*Quartation.* Another method of refining or assaying gold, is by what artists and workmen call *quartering*, or quartation. This consists in first melting the gold to be assayed, with three times its weight of silver,

after which this compound is cupelled, and the button rolled into thin sheets, and submitted to the action of nitric acid, which dissolves all the silver, leaving the gold untouched. The large proportion of silver is necessary, that the gold may not protect the former from the action of the acid. By weighing the coin and silver before the process, and the gold afterwards, the exact per centage of alloy is ascertained.

*Touchstone, or Basanite.* This is a very convenient as well as ancient method of trying the purity of gold. The term is from the Greek *basanos*, the trier, and the instrument is merely a little piece of dark silicious slate, found in rolled nodules, which the ancients obtained from Lydia, and which it was believed was found nowhere else. But it is found that fine dark basalt, or hornblende, answers equally well.

If a piece of gold be rubbed on such a stone, a trace is left, by the color of which, contrasted with that of the stone, an experienced eye can form a good estimate of its purity. The judgment is farther assisted by the change of color which a drop of nitric acid produces on the metallic trace, and which, as we have seen, dissolves any alloy the gold contains. By this simple method, jewelers, by long experience, are able to judge of the value of any specimen of gold offered them, so that they require no other test of its value in making large purchases of bullion or coin.

## CHAPTER V.

## INTRODUCTION OF THE METALS AS A MEDIUM OF COMMERCE.

IN the earliest, that is, the Scripture accounts of the use of the precious metals as a medium of trade, we find that they were estimated by weight only. Thus the shekel and talent did not consist of one or several pieces of metal of a specific weight or value, but of quantities or pieces equal to certain weights. It appears, however, that at a later period, the shekel was a piece of silver weighing about half an ounce, and its value nearly fifty cents, our money. But in the time of Abraham they went by weight, (Gen. xxiii, 16,) as he gave four hundred shekels by weight for a burying-place.

*Jewish Talent.* The weight of the Jewish talent, according to Dr. Bagster, was about 125 pounds Troy, and its value in silver, estimated at its present rate, about 1740 dollars. This was denominated a talent of silver, and consisted probably of many pieces, either in the form of ingots, as they were cast, or of the same hammered into various forms. It appears that, ages after this period, what went under the name of *hammered* money, consisted of pieces of gold and silver, and perhaps copper, cut into certain lengths, and impressed with a stamp, struck with a hammer, and hence the name. It does not, however, appear that the an-

cient Jewish money had even this approximation towards the art of coining, since ancient authors inform us that the Lydians, long afterwards, were the people who first invented and issued coined money.

It appears, according to the authority named above, that the talent of gold was of the same weight with that of silver, viz., 125 pounds, and that its value at the present day would be 27,000 dollars, estimating the ounce at 18 dollars. We find, however, that commentators differ materially in respect to the value of the ancient talent. Thus Dr. Adam Clark, who quotes Mr. Reynolds as his authority, has estimated that the gold which Solomon received annually, being 666 talents, amounted to £4,683,675 sterling; but we know not on what authority, or at what rate, this estimate is made. The words are, 1 Kings, chap. x, ver. 14, "Now the weight of gold that came to Solomon in one year was six hundred and three score and six talents of gold." This, according to the above estimate, is equal to about twenty-three and a half millions of dollars, our money, yearly income in gold only, without reference to the silver, which we read, ver. 21, "was nothing accounted of in the days of Solomon."

According to Calmet, the precious metals expended by the wisest of men in building Jerusalem and the temple, estimated in sterling money, would amount to eight hundred millions of pounds, or four thousand millions of dollars, American money.

*Sources of King Solomon's Wealth.* Here the ques-

tion very naturally occurs, "Where did Solomon, at that early period, obtain such vast quantities of the precious metals?" To this question it is difficult to offer a very satisfactory answer. But it must be remembered that Solomon lived many centuries after Abraham, and that even in his time silver must have been a very common article, otherwise four hundred shekels would not have been demanded and given for a piece of land no larger than was required to bury the dead of a family. Taking the shekel at fifty cents, two hundred dollars at the present day would buy a large plat of ground as near any of our cities as would be required for such a purpose.

We find also that the author of Job, whom some have considered cotemporary with Abraham, was well acquainted with the precious metals, and even the manner in which they were procured. "Surely," says he, "there is a vein for the silver, and a place for the gold where they fine it." In another place he says, "the earth hath dust of gold." These short passages show that Job knew that silver is found in veins among rocks, while gold more commonly occurs in small parcels on the surface.

These circumstances, and many more of the same import, contained in the earliest history of our race, seem to prove that gold and silver were accumulated in considerable quantities many centuries before the building of the temple. And there is no reason to suppose that they were lost, either by burying in the ground

or by shipwreck, or that they were appropriated, as in after times, to domestic uses, as the manufacture of plate, spoons, &c., or in the ornamental purposes of gilding or jewelry. Hence we may conclude that the precious metals continued to accumulate in the world until the time of Solomon. (The loss by abrasion is not here estimated, because the metals were not then made into coin.)

We conclude, from the accounts, that all the petty officers of state, called *kings*, in the Scriptures, had unlimited power over their subjects; and we know that in all ages, tyrants, whether great or small in respect to dominion and power, took possession of all the precious metals discovered and collected by their people. Indeed, the products of the mines in all monarchical governments, down to the time of the Spanish Viceroys in New Spain, were a monopoly of the crown, and hence the money everywhere, in ancient times, was accumulated in the hands of the chiefs.

The Israelites, on their way to the land of Canaan, undoubtedly collected much gold and silver from among the tribes through which they passed. We find, also, from the history, that the people, probably of the higher cast only, must have possessed considerable quantities of gold in the form of ornaments, before they left the land of their servitude. That this was the case, is proved from the circumstance that soon after their wanderings commenced, there was a sufficient quantity of the precious metal collected to form a golden calf. Indeed, the



history of the journey of this people almost everywhere shows that gold and silver were common among them. Thus the altar of incense (Ex. xxx,) was overlaid with pure gold, and the "sides thereof round about, and the horns thereof; and thou shalt make unto it a crown of gold round about." Ver. 3. Again, (Ex. xxxvi,) in the building of the tabernacle, it seems that much gold was used. Thus, (ver. 34,) "And he overlaid the boards with gold, and he made their rings of gold to be places for the bars, and he overlaid the bars with gold." Afterwards, when Gideon defeated the Midianites, among whom it seems there was a party of Ishmaelites who wore golden ear-rings, he requested that every man should bring the ear-rings of his prey. And the weight of the golden rings thus delivered was "a thousand and seven hundred shekels of gold," besides ornaments, collars, &c. By this we see that small quantities of gold, by way of ornament, were very common, at least among certain tribes at that day. Still, as above stated, there is no doubt but the chiefs or princes, as in all absolute governments, possessed in their own rights the largest portion of the precious metals within their domains. It is true, that private individuals sometimes possessed considerable sums, perhaps privately, or by special permission from authority. Thus, in Judges, xvii, we are informed that Micah stole from his mother eleven hundred shekels of silver, which was, however, afterwards restored, and from which his mother took two hundred shekels to form a graven and a molten image. This

was probably a wealthy family, for we find that this was a sum set apart for a specific purpose, and therefore we may suppose only a small part of what the mother possessed.

Every reader of the Pentateuch will see that the above are only a few passages, when compared with the whole, which go to prove that gold and silver were common among different nations many centuries before the time of Solomon.

It seems probable, from the sacred history, that this great and wise prince came into possession of most of the precious metals then known to exist, and that through his commands they were concentrated at Jerusalem for the purpose of building a temple to the Lord, a design which, during the life of David his father, had been promulgated among the neighboring princes and people.

"It seems clear, then, (says Mr. Jacob, in his History of the Precious Metals,) that when the peaceful reign of Solomon commenced, the accumulated mass of gold and silver must have been the collection of more than eight hundred years, reckoning from Abraham, or of near five hundred years since the Israelites, on their removal from Egypt, had become an independent nation. The spoil of the several tribes which was taken during the theocracy was carefully preserved in the public treasury, and was protected by the solemn sanction of the religion of the Hebrews, which kept it in the tabernacle under the title of the Treasure of Jehovah. None

of it could be destined to profane purposes without incurring the guilt of treason against that great Being, who was at once their spiritual and temporal sovereign."

That the metallic wealth, which was accumulated at the time of Solomon's greatness, had not arisen solely from the spoils of subdued nations, or from that which had been deposited as sacred treasures, we may infer from the commercial arrangements which his father, David, had made with other nations, and from which he received gold and silver, probably in large quantities.

From the above statements no one can doubt that Solomon had vast treasures of the precious metals in his possession before the building of the temple commenced. Besides this, the amount which his ships brought from Ophir, after a three years' voyage, being four hundred and twenty talents of gold, was no small addition to his former stock—being, according to Dr. Arbuthnot, nearly ten millions of dollars. With respect to the geographical situation of Ophir, commentators have expressed various opinions. Some have supposed that it was in Arabia, others in a remote part of Africa, from the length of the voyage; while the traveler Bruce, who has discussed the subject at length, believes that it was in the vicinity of the river Zambeze, opposite the Island of Madagascar, on the southern coast of Africa, where gold and silver have been found in abundance from the remotest antiquity—the length of the voyage

being accounted for in consequence of the monsoons, which prevail at certain seasons of the year in that climate.

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## CHAPTER VI.

### ANCIENT SOURCES OF METALLIC WEALTH.

THE general diffusion of the precious metals among the most primitive nations, of which history affords us any account, suggests a very obvious inquiry as to the sources whence they were derived. On this point, the sacred history affords us very little information—Ophir being the only country or locality mentioned from which gold, in any quantity, was derived. Nor does it appear that the navy of Solomon made more than one voyage to that land.

Mr. Jacob, in his *History of the Precious Metals*, has expended much time and learning on this part of his subject, and seems to have examined every ancient author who could afford any information on this question. From his forty octavo pages, on “The Mines of the Ancients in several parts of the World,” we derive most of what follows in this chapter.

It is most probable that the precious metals were first known to mankind in Egypt and the western parts of Asia. Thus Darius, after the conquest of Babylon, derived, by his law of taxation, from that country, a thou-

sand talents of silver, and six hundred talents of gold. The metals are supposed to have been derived from a part of China, India beyond the Ganges, Persia, Tartary, Thibet and Siberia ;—all of which countries possessed mines of the precious metals in the remotest times of history, and some of them yield more or less gold at the present day. In Siberia, modern travelers have discovered the remains of extensive silver mines, which appear to have been wrought by Nomadic tribes, before the conquest of that country by the Tartars. Wedges of copper and hammers of stone show that the miners did not know the use of iron, and the want of any remains of dwellings proves that they were savage tribes.

*India and Persia.* Alexander the Great derived, by tribute, vast quantities of the precious metals from Persia and India. Pliny mentions many of the places which yielded these metals at that period, but denies that two islands, at the mouth of the Indus, called Chryse and Argyre, or Gold and Silver, have their sands composed chiefly of these two metals, as some have declared.

*Nubia and Ethiopia.* The chief mineral wealth of the ancient Egyptians, at the time of the Pharaohs, was derived from Nubia and Ethiopia. Before our era, the abundance of brass from these sources was such that the chief parts of the domestic furniture of the people was made of it. Brass, at that period, was made by mixing copper with a yellowish earthy substance found in the ground, and melting them together. This sub-

stance, in after ages, proved to be the ore of zinc; though, for centuries, it was used to turn copper of a yellow color, and increase its weight, without the least suspicion that it was the ore of a metal.

The copper in these mines contained gold, which, it appears, the miners had the art of separating, but we know not by what means. The situations of these mines are known at this day, but are supposed to have been exhausted of their former riches. They were worked eight hundred years before the Christian era.

The Egyptians are known to have been centuries in advance of all other nations in the arts and luxuries of life, and hence we find that they had the art of purifying gold at the remotest period of history. Thus in Exodus, xxv and xxx, in building the tabernacle, Moses commands that certain parts shall be overlaid with *pure gold*. This must have been done by fire, or perhaps by cupellation with lead, as it is easy to suppose that this process (which we have described,) might have been accidentally discovered. The strong acids were then unknown, so that they had no means of purifying the metals by solution.

*Riches of the Egyptians.* Besides the passages in Scripture, by which it may be inferred that the Egyptians had considerable quantities of gold in the form of ornaments, we have also the additional testimony of Diodorus Siculus, who lived in the time of Julius Cæsar, and whose history professes to include a period of more than one thousand years. With respect to the

riches of that people in the precious metals, he states, in his description of the palace of the ancient Egyptian monarchs, that an inscription, curiously carved, in the royal cabinet, indicated the amount received into the treasury per year, which was equal to about thirty million of dollars our money.

Diodorus also states that after the burning of the palaces of Persepolis and Susa, which were built by the Egyptians, there was found and gathered up from the fragments and cinders three hundred talents of gold, and no less than two thousand three hundred talents of silver.

If the talent is estimated at one hundred and thirteen pounds, according to Dr. Arbuthnot, the weight of gold would be 33,900 pounds Troy, and that of silver 259,900 pounds. Now, these are vast sums, even at the present day; for, if we estimate the gold at eighteen dollars the ounce, which in coin is its present value, the three hundred talents amount to seven million, three hundred and twenty-two thousand, four hundred dollars. The silver, estimating it at one dollar and sixteen cents the ounce, amounts to upwards of three million six hundred thousand dollars.

Whether such enormous quantities of these metals were ever in the possession of the Egyptian monarchs, or whether such descriptions proceeded from falsehood and vanity, cannot be known; but that vast sums of gold and silver were in use, at that early period, is proved from the circumstances and facts we have already stated.

*Working the Mines of the Egyptian Kings.* Diodorus gives his readers an account of the manner of working the mines in the days of the Egyptian kings. "There are," says he, "infinite numbers thrust into these mines, all bound in fetters, kept at work night and day, and so strictly guarded that there is no possibility of making their escape. They are kept to incessant work by the nod of the overseer, who, besides, lashes them severely. Not the least care is taken of the bodies of these poor creatures. They have not even a rag to cover them, and whoever sees them must compassionate their deplorable condition. Neither female weakness, nor that of old age, excuses them from their task, to which they are driven with whips, until, worn out by their intolerable misery, they fall dead on the spot." "Nature," he continues, "teaches us that gold is obtained by labor and toil; is retained with difficulty; creates everywhere the greatest anxiety; and, in its use, creates both pleasure and grief."

This picture, which applies to the working of mines of the precious metals three thousand years ago, requires little change to represent the same operations under all despotic governments down to this day.

*Mining operations of the Greeks.* It is said that the Phœnicians taught the Greeks the art of mining, and that the first mines wrought in Europe were chiefly carried on by Phœnician workmen. These mines were, at first, in the islands of the Mediterranean, and yielded chiefly copper and tin. Afterwards the Athenians,



having learned the art, worked the rich silver mines of Attica with great success. They also obtained gold from Thrace, and from the island of Thaurus. From these sources, and from conquest and consequent tribute, did this people obtain the means of elevating their city and state to that degree of splendor and magnificence which has seldom been rivaled by any other nation.

The same ancient author, Diodorus, states that Philip, the father of Alexander, about three hundred and fifty years before Christ, derived from the mines in Thrace a yearly revenue of one thousand talents of gold. This was probably the Attic talent, which was £198 sterling, or nearly one thousand dollars our money.

*Quicksilver.* It appears that, although the Greeks were acquainted with cinnabar, which is the sulphuret of quicksilver, and even with that metal itself, they were ignorant of its use as a means of separating gold from the earthy matter with which it is found.

*Mines of Italy.* Pliny, who lived about the time of the Christian era, states that Italy yields to no country in its abundance of mines of all the several kinds of metals. These mines still exist in some part of that country; and especially in the vicinity of the river Po, gold is found, at the present day, though not in large quantities. In the vicinity of the Alps gold was also found among the sands, and, at one period, in such quantities as to diminish its price one third of its former value all over Italy. Afterwards, Strabo states, the

proprietors of these mines diminished the number of workmen, in order to raise its value to the former standard.

*Spanish Mines.* Many parts of Spain, according to ancient authors, afforded much gold and silver. These mines were first worked by the Phœnicians; and, although great quantities of the precious metals are said to have been extracted from them, yet there are no accounts which enable us to estimate the amounts. From one mine, called Bebulo, it is stated by Polybius, that after the Roman conquest, Hannibal obtained, daily, three hundred pounds of silver. In another part of that country, the same author says that the Romans employed forty thousand workmen in the mines, but with what success we have now no means of knowing.

From the above statements we may infer that the quantity of the precious metals obtained by different nations, before the Christian era, must have been immense; and hence that the vast wealth of the Romans, to which we shall refer hereafter, is no matter of astonishment, when we consider that a great proportion of the precious metals in the world were concentrated in that city, as they had before been in the city of Jerusalem.

## CHAPTER VII.

ACCUMULATION OF THE PRECIOUS METALS IN DIFFERENT PARTS OF  
THE WORLD.

THE most ancient account of the transfer of large amounts of gold and silver to any particular country or city, has already been detailed with respect to Jerusalem, and the profusion of gold in the possession of Solomon.

While the Hebrews in the East were thus almost overwhelmed with mineral wealth, the Greeks of the West were so nearly destitute of them, that at a much later period we find that Hiero, king of Syracuse, sought, almost everywhere, to find a quantity of gold sufficient to form a statue of the goddess Victory, and which he finally obtained at Corinth. It must be remembered that, although Hiero lived nearly five hundred years after Solomon, yet the communication between their nations, by way of trade, had not then commenced, and that the circulation of coined money was unknown. Gold and silver were used by the rich to ornament their persons and their horses, and if exchanged in trade, it was by weight, and not by pieces of a given value.

It is not, however, to be supposed, that from the days of Solomon down to those of imperial Rome, that the common people possessed, as individuals, any consider-

able quantities of the precious metals. These were chiefly in the hands of princes, who universally had absolute power over their subjects, and whenever conquests were made, the first law promulgated was that the conquered should pay tribute in gold and silver to their victors. Thus we find that the celebrated Cræsus, said to have been the richest of men, obtained his wealth by tribute from surrounding nations, but chiefly from the Greeks, which nation, we must therefore infer, had at this period become rich in gold and silver.

*Accumulation of Mineral Wealth at Rome.* The Roman historian, Suetonius, writes: "That the royal treasures of Egypt being brought to Rome at the triumph after the war of Alexander, there was such an abundance of money, that, the rate of interest being lowered, a very great increase took place in the price of land." "After this," he continues, "when money flowed in from the confiscations, Augustus allowed the gratuitous use of it, for a fixed time, to those who could give security for double the amount."

It is well known that the victories of Alexander, and the consequent accumulation of the precious metals into his treasury, served to distribute them from Persia to Egypt, and from Egypt to Greece, and so to Rome. The coffers of Darius, of Persia, one of the richest monarchs of the age, and the accumulated wealth of at least a portion of Egypt, fell into his hands; and on the return of his army towards the west, the vast wealth thus plundered from conquered nations flowed in the same

direction. Thus, in the course of a century or two, a large proportion of this immense mineral treasure fell into the lap of the "mistress of the world." This accumulation was partly obtained by the direct and usual plunder of the coffers of all conquered tribes or nations, and partly by the taxation or tribute of those who had made treaties with their conquerors, and partly by the working of the Italian mines. No nation, not even our mother-land, knew better how to accumulate by imposts, excise, taxation or tribute, than did imperial Rome. Besides the tribute paid into her treasury by distant provinces, whether friends or foes, there was a heavy tax on most, if not all, foreign articles which came within her gates, or even entered her dominions, whether by sea or land.

Gibbon, in his *Decline and Fall*, has estimated that the tribute which Rome received from her various provinces, at a period somewhat before the Christian era, amounted to the sum of nearly twenty millions of pounds sterling, or about one hundred millions of dollars. But this was only a single item of the amount which flowed into the royal exchequer every year, for we find that the mild and peaceful Emperor Augustus, during his quiet and prosperous reign, imposed a tax on the estates of all deceased persons, amounting to the twentieth part of their property. Now this, at a period when that city contained, it is said, at least two millions of inhabitants, and many of them, as we shall see directly, of great wealth, the receipts into the treasury,

from this source, must have amounted to many hundred thousands per year.

From all the above named sources, viz., tribute from conquered provinces, imposts upon foreign goods, and taxation on nearly every article of necessity or luxury consumed by the living ; and, lastly, a division of every deceased man's estate in favor of the government, it can hardly have been otherwise than that there must have flowed into the treasury of that great city at least from one hundred and fifty to two hundred millions of dollars per year. This, however, we do not profess to offer as an estimate founded on any certain data, but only on the historical facts above stated, and of which, therefore, the reader can form his own opinion. Nor is it probable that this immense revenue continued for any great period of time, but only while the Roman power was at its height, and her citizens most numerous.

Says an able writer on this subject : " A succession of events had brought to Rome the accumulated fruits of the labors of mankind for a thousand years. There had been a constant production, and but little consumption of gold and silver ; and, although these metals had flowed to Rome as the centre of the world, yet the arts and industry of the provinces had regularly received back a portion of them in return for those luxuries and necessities which that great metropolis required. The provinces were thus enabled to continue their contributions to the wealth and luxury of the imperial city through the Augustine age, after which there was a

gradual diminution of the wants of the city, as well as of the ability of her vassals to supply them."

**RICHES OF INDIVIDUAL ROMAN CITIZENS.** Since the days of Job it has been rare that great individual wealth has been derived from the cultivation of the earth alone, and it is equally true that small places seldom bring great riches. It is, in our own times, in great cities that men, either by merchandise or speculation, or usury, become Cræsus-like in their accumulations. And so, according to Pliny, it was at Rome; and it seems then, as well at the present day, the fortunes of individuals sometimes were estimated; and, no doubt, then, as well as now, formed matters of interest, speculation, or inquiry; for when was the time that masses of gold did not interest our race? The author just named, flourished sufficiently near the age of Augustus to have derived the truth with respect to the estimated riches of Roman citizens. From him and Suetonius we select a few examples. The private fortune of the Emperor Augustus, which he derived chiefly from the legacies of deceased friends and relations, amounted to thirty-two millions sterling, or one hundred and sixty millions of dollars, our money. Cicero, the orator, independent of his own exertions and earnings, received from his clients, and friends, and admirers, as presents, a sum equal to eight hundred and fifty thousand dollars. Caius C. Isiodorus, who it appears was a private citizen, and had no other distinction, so far as is known, but his wealth, and who was cotemporary with Augustus, left

behind him four thousand one hundred and sixteen slaves, three thousand and six hundred yoke of oxen, and two thousand and three hundred head of other cattle. Besides which, though we are told he had lost much of his property in the civil war, he had, in gold and silver, a sum equal to about fifteen millions of dollars, our money. Crassus, another private individual, is said to have possessed, in lands, an amount equal to £1,614,583, or \$8,072,915; besides which, he left as much more in money slaves and furniture, making the amount equal to more than sixteen millions, present currency. And Tiberias is said to have left behind him a sum amounting, in our money, to nearly \$110,000,000, which fell into the possession of the tyrant Caligula, and which, it is also said, he squandered in the course of a single year.

We might continue these examples of the individual and national wealth of the Romans, but our object being merely to collect a sufficient number of historical facts, to enable our readers to draw their own inferences with respect to the amount of the precious metals accumulated at the imperial city, we shall here leave the subject by remarking,

1st. The applications of gold and silver to various purposes, by which they are lost or are employed for domestic purposes, as at the present day, were unknown to the Romans. Watches, plate, spoons, forks, and many other purposes to which vast quantities of silver are now applied, were the inventions of later times.



Gold was used as personal ornaments; but gilding, which now absorbs a vast amount, was rarely employed at that period.

2d. The diffusion of money among the common people was very scanty, since a great proportion of the labor was performed by slaves, who then, as at present, received nothing but their food and clothing. Although coined money was known to the Romans, it did not, for a long time, pass currently as the common medium of trade, but much of the business was carried on by bartering one commodity for another, as is done among aboriginal, and savage tribes at this day. Hence, if we estimate the wealth of Rome as a city, by comparing its treasures and a few of its richest individuals with the same at the present day, making the number of inhabitants equal, we should find, for the reasons above assigned, that all ancient cities would fall far short of those of the present time in the quantity of the precious metals they contained.

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## CHAPTER VIII.

### CONSUMPTION AND LOSS OF GOLD AND SILVER.

WITHOUT any special reference to the present inquiry, a historical sketch of Rome and her conquests and colonies would bring the reader to the conclusion, that it could hardly have been otherwise than that a

vast amount of metallic treasure must have been concentrated in that city, and the above well authenticated items of her history prove that this was so. And now the inquiry suggests itself to every intelligent reader, as to the disposition of all this treasure. Was it distributed among other nations on the decline of the Roman power? Was it buried in the earth to any amount? Were large portions of it worked into domestic articles, as plate, and other portions used in gilding picture frames, &c.? Were any considerable portions lost in the sea? Or who can say that large quantities of these identical metals are not still in existence? Who knows that his ring, his watch, or his goblet, is not composed, at least in part, if not entirely, of the very gold or silver which made a portion of the treasure of Augustus or the fortune of Crassus? And then who can deny that this did not come from Egypt with Alexander's army? And again, who says that this very precious metal did not pass from Jerusalem, nay, even from Solomon's Temple into Egypt, and so into the hands of Alexander?—thus, most probably, having had its origin at Ophir; or, perhaps, it is a part of that collected by the children of Israel on their long journey, a portion of which, undoubtedly, found its way to Jerusalem.

Now, all this is not only possible, but by no means improbable, since we know that the precious metals have, during the last five hundred years, been constantly changing places in most civilized parts of the world; and we have shown, in the course of this book,

that similar transfers were not entirely unknown in the remotest times of history. Besides, the greater part of the precious metals employed in this country came from the opposite side of the Atlantic, either in the form of coin, plate, or ornaments; and this, in its turn, has, in part at least, been re-coined or newly manufactured from more ancient forms, which no one can trace to their originals. As the precious metals are indestructible by age, and as it has often occurred that very ancient articles, and even those of Egyptian manufacture, have been found in the earth in various parts of the Old World, who shall say that a portion of that now in existence, and forming a part of the trinkets he or she so much values, did not once enter into the composition of the cherubim of the holy temple, and that it is not a morsel of the 120 talents of gold which the Queen of Sheba so kindly presented to the wisest of men? But these are useless speculations; and now to the more reasonable subjects of this chapter.

**ROMAN COINS.** Silver coins began to be used as money in Rome about two hundred and fifty years before our era. The Greeks, a century before this period, knew the art of coining, as is proved by the existence of medals bearing the head of Alexander. During the reign of Augustus, who lived to A. D. 14, the circulation of coin, chiefly of silver, became quite common at Rome, and probably, also, in most of her provinces. The quantity, however, does not appear to have been sufficient for business purposes, since we find that

the precious metals, still went by weight for a long time afterwards. It is not improbable, however, that coins went by weight when large payments were made, or large quantities received, as is the practice at this day with bankers and jewelers. The depreciation of weight by the use of coin has often led to this test of value.

**LOSS BY ABRASION.** Those who purchase old silver coin by weight are only aware what amount has been lost by abrasion. The constant friction which goes on between several loose pieces of metal carried in the pocket from year to year, finally produces the effect which every one has observed in pieces of old Spanish coin. The smaller the pieces the more rapid the loss, and the greater the aggregate amount. At first, the sharp lines or angles forming the devices disappear, and afterwards the legend, date and inscription, so that, finally, no marks of the die are to be seen. If, now, the piece be annealed, or heated to redness, the obliterated device will again appear. The cause of this, though not apparent to every one, is readily explained. The same quantity of any metal will expand equally with given increments of heat. In coining, the figures are produced by the inequality of the die, and hence some parts of the metal are concentrated by its force more than others. Hence, when heated, the parts most condensed will rise highest. .

The quantity lost by abrasion is of course as entire as though it was annihilated. Old picture frames and ancient gold lace can be burned, and a portion of the

gold they once contained can be recovered. But the waste by friction has no remedy; and any one who will go with us into nothing more than a rough calculation on this subject, will be astonished to find the amount of the precious metals thus lost.

The English government, some years since, ordered experiments to be made at their mint to ascertain the probable loss which gold and silver coin suffered by circulation. It will be seen that the loss to individuals who took coin by tale, and sold it to the mint or to manufacturers of metallic goods by weight, must, from what we have said above, have been very considerable. The record is as follows: "In the course of this year, (1798,) the officers of the mint repeated the experiments which had been made in the year 1787 respecting the actual wear of the silver coins, from which it appeared that a considerable loss had been occasioned by the wear of eleven years only, for it was as follows." Here follows a table of crowns, half crowns, shillings and sixpences, with their loss of weight and per centage, separately carried out, and which is extracted as we find it in Jacob's Inquiry on the Precious Metals, p. 404.

12 $\frac{3}{8}$ crowns,	} were requi- site to make a pound Troy, instead of	12 $\frac{1}{8}$ crowns,	} as issued from the Mint.
27 $\frac{1}{8}$ half crowns,		24 $\frac{3}{8}$ half crowns,	
82 $\frac{9}{8}$ shillings,		62 shillings,	
200 $\frac{3}{8}$ sixpences,		124 sixpences,	

The deficiency amounted in the

Crowns to 3 $\frac{1}{3}$ $\frac{1}{13}$ per cent.	Shillings to 24 $\frac{1}{3}$ $\frac{2}{13}$ $\frac{4}{13}$ per cent.
Half crowns to 9 $\frac{2}{11}$ $\frac{1}{10}$ do.	Sixpences to 38 $\frac{2}{11}$ $\frac{2}{10}$ $\frac{4}{10}$ do.

It will be observed that the loss in the small coin increases in proportion to its diminished size. In proof of this, an experienced worker in metals, who is in the habit of buying coin, informs the writer that he has found that some lots of old Spanish silver, chiefly in the form of shillings and sixpences, on being weighed, had lost nearly 40 per cent. of their original value. The time these had been in circulation of course could not have been ascertained, the devices being obliterated.

**MR. JACOB'S ESTIMATE.** This author, to whom we have before had occasion to refer, has gone into certain calculations with respect to the circulating coin in existence at Rome and in her colonies, at the time when Vespasian succeeded to the imperial dignity, about A. D. 80. This sum he makes nearly equal to £322,200,000 sterling, or \$1611,000,000, our money.

“Assuming, then,” says this author, “that this sum was nearly the amount of the whole stock of current money, we may, without relying on its precise accuracy, venture to make use of it as the foundation of an estimate of the loss created by abrasion in the period we have brought under consideration.” This period is from the death of Augustus, A. D. 14, to the dissolution of the western empire, about A. D. 496, forming a period of 482 years.

Mr. Jacob estimates the loss by friction, at that time, at a far less rate than at present, because the coin was in larger pieces, and the circulation less common—the money at that day being more commonly transported

in masses, and often resting for a time in the hands of the rich or in the treasuries of the government. The loss by abrasion he therefore estimates to be equal to one part in three hundred and sixty, annually. Thus a piece of coin weighing 360 grains, would lose in a single year one grain, or a thirty-sixth part in ten years.

It is not necessary, for our purpose, to follow the author in his calculations from one period to another—it being sufficient to state that, at the termination of the four hundred and eighty-two years, the original sum of £322,200,000 is reduced by abrasion alone to £87,033,099 sterling; thus making a loss equal to about 1,176 millions of dollars, our money, in less than five hundred years.

It is proper to state that in all estimates of loss by the use of coin, the ratio of diminution becomes less from one year to another; that is, new coin, in consequence of its sharp angles, loses more by the same friction than old.

We can only offer the above estimates of losses by abrasion as approximations to the truth, since it will be seen from the very nature of the subject that nothing certain can be known. It will however occur to every one, who will notice the effects of this cause on old pieces of silver now in circulation, that the diminution is not only constant, but that it must be immense on the currency of the world in the course of years.

## CHAPTER IX.

CONSUMPTION OF THE PRECIOUS METALS BY THE ROMANS FOR  
DOMESTIC USES.

THERE is no reason for believing that large quantities of gold and silver were employed by the Romans for domestic utensils. The discoveries at Pompeii, which was buried by Vesuvius in A. D. 79, are sufficient to prove that its inhabitants were by no means extravagant in this respect. This, at the time of its inhumation, was a populous and thriving city, and contained many noble public edifices and costly private dwellings. In some of these were found pictures, statues, books and carved ornaments, all tending to display the taste and wealth of the owner, and all destructible by time and heat; while nothing, of any considerable value, has ever been discovered in the form of metallic utensils of any kind. Neither spoon, fork, or knife of silver, or gold, has ever been found among these ruins, which, from the indestructible nature of these metals, would undoubtedly have been the case had such articles been common. That they were not removed during the alarm, seems to be indicated by the fact that money and jewels, to a considerable amount, have been found.

It would appear, therefore, that the fashion of making domestic utensils of the precious metals was not common among the Romans, though Gibbon quotes au-



thority to show that the rich senators "had each a semicircular table of massy silver, such as two men could hardly lift, and also a vase of solid gold, weighing forty pounds, besides cups and dishes."

We may then conclude, that although the patrician families had some valuable articles of metal in their houses, that this was not common, and therefore that the quantity of gold and silver thrown out of circulation in this way, though considerable, could not have been immense, as we shall see is the case at the present time.

**LOSS OF THE PRECIOUS METALS BY BURYING IN THE EARTH.** To account for the gradual disappearance of the vast metallic wealth which it is certain the Romans possessed during the height of their power, we must refer to several circumstances besides that of abrasion and the manufacture of domestic goods already noticed. One of these is secretion by hiding in the earth, which, from the remotest times, people have been in the habit of doing, whenever their country was invaded by an army.

In about A. D. 400, Alaric, king of the Visigoths, devastated most of Italy, and ten years after laid siege to Rome itself. During this period, we cannot but suppose that immense quantities of the precious metals were hidden in the earth; and while we know that treasures of this kind have often been found, still there is every reason to believe that a large proportion still remain in their original places.

In the early history of England it is stated that the

finding of hidden treasure was so common, that many persons became rich by accident and without labor, and a law was therefore enacted, by which all the money and jewels thus discovered should, without benefit to others, belong to the king. This was called "*Treasure Trove*," and from it a large revenue was often derived. This law, we believe, is still in force, though seldom of any benefit to the crown.

**DISTRIBUTION OF THE METALS BY PLUNDER AND OTHERWISE.** When Italy was overrun by the barbarians under Alaric, the chief towns were plundered of all the valuable utensils which these savage conquerors could secrete or carry away, and hence we must suppose that a large proportion of the metallic wealth of the country, which the owners had not buried in the earth, fell into their hands, and was destroyed or conveyed out of the country.

The history of Rome, at that period, also informs us that large sums of gold and silver were paid to these ruthless victors by way of ransom. Thus Honorius, when Rome was besieged by Alaric, gave that barbarian king five thousand pounds of gold, thirty thousand pounds of silver, four thousand silk robes, three thousand pieces of scarlet cloth, and three thousand pounds weight of pepper, on the immediate payment of which he stipulated to spare the imperial city from ruin.

**FOUNDATION OF BYZANTIUM.** The foundation of Byzantium, the present Constantinople, by the first Christian emperor, and the transfer of the Roman power and

government to that city, must of course have transferred also to that part of the country a large portion of the metallic wealth of the former imperial city.

No estimate of the vast sums expended by the founder on this new seat of the empire can now be made, but we gather from history some items to show that there was no want of money or of taste to indulge in the utmost profusion of expenditure.

Constantine, says Gibbon, appropriated sixty thousand pounds weight of gold to the construction of the walls, the porticos and the aqueducts of his new imperial capital, and drew to that city many of the patrician families of Rome, by offering them extensive grants of land in the Asiatic provinces, on the condition that he should maintain in their new residences the splendid palaces he had constructed for them.

Now, the sixty thousand pounds of gold, according to the estimate of Mr. Jacob, is equal to £2,500,000 sterling, or \$12,500,000.

*Prices of different Articles at Rome about A. D. 350.* A curious edict, fixing a very copious tariff of prices at Rome during the reign of the Emperor Diocletian, has been discovered within the last century. The articles amount to several hundreds, a few of which we insert for the use of the antiquarian. These prices were in Roman denarii, and which have been translated into English currency.

	£	s.	d.		£	s.	d.
Oil, first quality, per pint, . . .	0	17	6	At hearing the cause, at court, . . .	32	6	0
A pheasant, fattened, . . . . .	7	19	0	Honey, best, per pint, . . . . .	0	17	6
Butter, Roman lb. . . . .	0	7	6	A goose, fattened, . . . . .	6	2	0
Best river fish, lb. . . . .	0	5	3	Lettuces, best, five, . . . . .	0	2	5
Beef, do. . . . .	0	7	6	Onions, best, twenty five, . . . . .	0	2	5
Laborers, farming, per. day, . . .	0	15	10	Cucumbers, ten, . . . . .	0	2	5
Stone mason, do. . . . .	1	11	8	Quinces, ten, . . . . .	0	2	5
Worker in Mosaic, do. . . . .	1	18	2	Citron, large, twenty, . . . . .	0	16	0
Wall painter, do. . . . .	2	5	6	Apples, forty, . . . . .	0	2	5
Figure painter, do. . . . .	4	16	6	Melons, large, two, . . . . .	0	2	5
Schoolmaster, for each boy, per month, to teach letters, }	1	11	8	A beaver's skin, . . . . .	3	4	4
For Greek and Latin, each boy, }	6	8	8	A leopard's or lion's skin, . . .	32	6	0
per month, }				The same made up, . . . . .	40	0	0
Lawyer, for application to court, .	6	8	8	Boots, without nails, . . . . .	3	17	6
				Wine, best, English pint, . . . .	0	10	0

Whether the edict, fixing these enormous prices, both of articles of necessity and luxury, was due to the abundance of gold and silver, or to the debasement of coin, or the scarcity which prevailed at the time, is unknown. The denarius, by which the prices were estimated, was a silver coin, worth about 14 cents our money, but whether its value had depreciated at that time by debasement, we know not. As paper money had not been invented at that period, these prices could not have been owing to bank failures or the inability of the government to pay.

## CHAPTER X.

### GREAT DIMINUTION OF METALLIC WEALTH FROM THE NINTH CENTURY.

HAVING thus attempted to show from what causes the gradual diminution of the precious metals is to be attributed, from the time of the Augustan age to

the division of the Western Empire, and the transfer of the Roman power to Constantinople, we now proceed to show why this diminution continued, or increased down to the eighth, ninth, and tenth centuries.

The causes already assigned for the disappearance of the vast metallic wealth of Rome are *abrasion, domestic uses, burial, plunder, and transportation*. To these might have been added losses by *shipwreck*, and consumption by *gilding*. With respect to the first, we can only suppose that a nation having possessions and colonies in nearly every inhabitable part of the earth, and many of which lay beyond seas, must occasionally have lost considerable sums of money by the destruction of their vessels. Even at this day, when the science of navigation, and the art of ship-building have advanced nearly to perfection, there are still immense losses of all sorts of property, including the precious metals, often in large sums. We may well believe, then, that in their distant voyages, with small vessels, as well as in those along the shores of their own seas, accidents often happened, and that the Romans thus lost large quantities of their mineral wealth, which of course could never again be recovered.

With respect to the art of gilding, it does not appear that the Romans understood how to reduce their gold to thin leaves, as is practiced at this day. The gold was hammered thin, and put on by means of size or glue, but the sheets were still what our artists would call thick, and probably could not be laid on so as to

produce a smooth, equal surface, such as we now see. It seems, therefore, to have been rather *plating* than gilding, and though none but the rich could afford this sort of furniture, it is not improbable that considerable gold was lost in this way, for it is clear that but a small proportion could be recovered after such a process.

*Unproductiveness of the Mines.* (By *mines* is here meant places where metals are found, whether on, or beneath the surface.) The causes above enumerated are sufficient to show how the greatest accumulation of coin may be lost, or so distributed as no longer to be in circulation, or to be estimated in the wealth of a kingdom, or of the world.

Such causes, it is obvious, must have been more or less in operation from the remotest antiquity, or from the time when men first began to use the precious metals ; and hence it is also apparent, that in process of time, without addition from their sources, the metals would cease to be a circulating medium, and not only so, if kept in constant use, they would, to the eye of man, cease to exist at all, being as masses, annihilated by abrasion.

But during the time of which we are now speaking, that is, from about A. D. 14 to 475, the mines of the precious metals, in most parts of the world, had either been abandoned, or ceased to yield any considerable returns either to individuals or nations. The cause of this, at least so far as concerns the Roman Empire,

appears to have been the derangement of the ancient habits and business of the country, and perhaps the poverty consequent upon the devastations of the Goths and Vandals, which it appears everywhere produced the effects of fire and pestilence upon the houses and their inhabitants.

According to Gibbon, the decline of Roman wealth began even before the incursions of the barbarians. The administration of the Roman emperors may have been one cause of the amazing desolation which had become so obvious after the footsteps of the barbarians had been seen in Italy ; but another cause had been operating, which, from its almost imperceptible progress, may have equally escaped the observation of the government and the notice of historians, of their deeds. While the production of the precious metals from the mines had ceased, and the countries near the mines had poured the whole, or the greatest part of their long accumulating treasures into the universal empire, there would be a consumption, a decay of the quantity of gold and silver in constant progress, which, by lowering the metallic price of all other commodities, would check that industry by which alone any country can continue to prosper.—*Gibbon's Rome.*

We find from other sources that there was a constant diminution of the circulating medium in Italy, and probably all over Europe, for several centuries after the period above specified, so that the premium.

or money at Rome was double, or in many years triple what it was during former times.

The working of mines for gold and silver, as above stated, yielded little encouragement to the operators; and finally, perhaps from the state of the country, or from total want of success, they appear to have been for several centuries entirely abandoned. Thus from about A. D. 600 to 900, it is said "that the greatest diligence has been able to discover no trace, in any author, of the operations of mining having been carried on by any of the Roman colonies."

During all this period, there being no means of supplying the constantly diminishing effects of several of the causes already specified, it is almost obvious that the precious metals, throughout the Roman Empire, which then included most of the civilized world, became exceedingly reduced in quantity.

Indeed, Mr. Jacob, so often quoted, has again at this period had reference to the effects of abrasion, as formerly described, by which, with several other causes, he has reduced the circulation of gold and silver within the Roman Empire, or in the world, at the time of the discovery of America, to £34,000,000 sterling, being in our money equal to \$170,000,000.



## CHAPTER XI.

## CONSUMPTION AND PRODUCTION OF GOLD AND SILVER FROM THE TENTH CENTURY TO THE DISCOVERY OF AMERICA.

WE have already seen that no records of mining operations for the precious metals, or even any statements of authors have been found, by which we can gather any certain information on this subject for several centuries, after the incursion of the barbarians into Italy, and the foundation of Constantinople.

During the tenth century the mines of Saxony were discovered, and these have been wrought for silver, with various success, from about 1170 to this day. Several mines for silver, in Germany, were also opened during this and the next century. What amount of the precious metals these mines yield, is unknown, but that it was considerable, we may suppose from the following remark in Anderson's Dictionary of Commerce. It was the silver mines found in Germany, in the tenth and following centuries, which gradually increased the quantity of money and the price of necessities, even before the discovery of America.

About this period there seems to have been much attention paid to the working of mines in many parts of the world, probably owing to the universally low state of the public finances. There having been little if any accession to the precious metals for the last

four or five centuries, and the waste being constant, it is obvious that at the period in question there must have been a scarcity before unknown. Under such circumstances, it is no matter of wonder that the attention to mining should have become as universal as were the wants of gold and silver ; and we accordingly find that from the twelfth century to the discovery of America, there seems to have been a Californian rage all over Europe, to explore the earth in search for her precious contents. In many, and even in most instances, the mines which gave the greatest hopes to the discoverers were found to be of short duration, their precious contents being soon exhausted. In very numerous instances, immense excavations, to the entire ruin of the parties, were abandoned in hopeless despair, the only returns having been obtained by the first discoverer, near the surface.

It is not within the design of this little work to show the results of these individual operations, or to give the names of the places where mines were opened, or sands washed. Such a list, indeed, would occupy many of our pages, while the names would be useless to our readers. We will, however, name some of the states or countries where such operations commenced, in order to show the almost universal mania which prevailed on this subject, and by which it will be seen that the present California fever is only a renewed paroxysm of a long since prevailing epidemic.

As above stated, a few of these mines have continued profitable to this day, while most of them have long since been either exhausted, or never yielded any profitable returns. In Greece, Macedonia, Hungary, Sclavonia, Wallachia, Transylvania, Tyrol on the Danube, many places in Saxony, Prussia, Germany, and Hanover, many parts of France, especially Languedoc, and various parts of Spain, mines were wrought: also in the French Pyrenees, where the mines gave high expectations. In Northern Europe, the gold and silver mines in various parts of Denmark, Norway, and Sweden, were celebrated for their riches. Thus it is said, when Canute, of Denmark, who married Emma, Queen of England, sailed to her country, "the sterns of his ships had lions of molten gold, and on the mast-heads were golden birds which turned with the wind, and various dragons which threatened to breathe out fire. There were also human figures, like living ones, glittering all over with gold and silver. The ships were so splendid that they seemed a flame of fire, which blinded the eyes of all beholders, &c., thus arguing the profusion of these metals that existed in that country. It is said, however, that the English Queen furnished a large proportion of these ornaments along with the crown of her country. In what are now the British dominions, mines were wrought in England, Scotland and Ireland. In the first country gold was found at Cornwall, in the second at the Grampian hills, and in the third at Wicklow. Russia

and Siberia also had their gold and silver mines, some of which formerly yielded considerable quantities of metal, but those now existing at the Ural and Altai mountains, and which we shall have occasion hereafter to mention, had not then been discovered.

The localities of these mines are most of them known at the present day only by the excavations or mounds of earth thrown out by the ancestors of the present races, few of them having been worked during the last hundred years, the greater number having been abandoned ere the discovery of those of South America. Those of Hungary, Saxony, and a few others, are still wrought with profit.

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## CHAPTER XII.

### EFFECTS OF THE SCARCITY OF MONEY ON THE PRICES OF COMMODITIES.

NOTWITHSTANDING the number of mines above specified, and which indicate that a general search for the precious metals had been almost everywhere undertaken, it does not appear that the quantities actually obtained were sufficient to supply the diminution occasioned by the uses of these metals, and the other causes mentioned.

Their high prices in England are indicated by many circumstances in the history of that country. Thus Edward V, about 1400, enacted, "that no artificer, or

other man, shall henceforth gild or silver any locks, rings, beads, candlesticks, harness or girdles, chalices, hilts, nor pommels of swords, nor covers for cups made of copper, upon pain of forfeiting to the king one hundred shillings."

This law appears to have been made not only for the purpose of preventing fraud in the sale of plated or gilded goods for solid metal, but also to prevent the conversion of the circulating coin into articles of extravagance or luxury. Almost the only coin then used in England were bysants, or bezants, so called because they were struck by the Romans at Byzantium, now Constantinople. A pound tróy of gold was coined into 72 of these pieces, and to show their value during the latter part of the tenth century, we are told that the celebrated St. Dustan bought of King Edward the manor of Hendon in Middlesex, for two hundred bezants, or a little more than three pounds weight of gold, being less than seven hundred dollars our money, and which Camden, three hundred years ago, did not consider the hundredth part of its value.

But a more striking illustration of the value of money at this period, is the following list of articles, with the prices, in the reign of Ethelred, towards the close of the tenth century, as quoted by Dr. Henry.

	Sterling.				Sterling.		
	£	s.	d.		£	s.	d.
Price of a man, or slave, . . .	2	16	3	A cow, . . . . .	0	6	2
A horse, . . . . .	1	15	2	A swine, . . . . .	0	1	10½
A mare or colt, . . . . .	1	3	6	A sheep, . . . . .	0	1	2
An ass or mule, . . . . .	0	14	1	A goat, . . . . .	0	0	4½
An ox, . . . . .	0	7	0½				

We must leave it to our readers to estimate the comparative amount of circulating money at that period and the present, allowing for the population of the world, and taking the above prices and those of the same commodities at the present time, as the grounds of calculation.

If these prices be compared with those of Rome, about six hundred years before, as given in Chap. II, it will be observed that a pound of beef at the imperial city, in the reign of Diocletian, cost within a half-penny, the price of an ox at London, in the days of King Ethelred.

These great differences in the prices of the necessities as well as the luxuries of life, must no doubt be sought for, at least, in a great measure, in the abundance of metallic wealth at one time, and its scarcity at another. But whether or not there were circumstances besides these, by which so wide a difference was produced, we have not at this day any means of deciding.

*Prices of Commodities in France—9th and 10th Centuries.* There are circumstances which clearly indicate that in France, at the period above mentioned, there was, in common with England, so great a want of coin, that the reigning monarch, in his whole kingdom could not raise a sum, which, at the present day,

passes through the hands of some merchants of the higher grade every month in the year.

Thus history informs us that Charles the Bold, towards the close of the ninth century, when projecting a military expedition against Italy, could only raise, by every method in his power, and some of them were by no means lenient, the sum of ten thousand marcs, an amount equivalent to about ninety thousand dollars of the present time.

At a period somewhat earlier, if we take the price of bread as the standard of the value of money, and this in common years has ever been considered a good test, we shall find a still greater contrast between that age and the present. In France, the price fixed for twenty-four pounds of wheaten bread was one denier, equal to three pence sterling, or nearly six cents, our money. In Saxony, a bushel of wheat weighing sixty pounds, which is nearly our bushel, was sold at about the same period, at a price equal to four pence, our money, this being the usual cost.

*Price of Labor.* The price of labor has always been considered one of the most sure criterions of the price of bread; the first being the means among the poor by which the latter is gained. Hence, in all countries where money is scarce, or is not paid for daily labor, (which has often happened,) it has been customary to fix the price of a day's work at a given quantity of corn, or flour, either by measure, or weight.

As a specimen of the price of labor, thus indicating

the excessive value of coin, we give the following: King John, of France, even so late as the beginning of the fourteenth century, among other kinds of labor, fixed the price of that of threshing wheat, and by which it appears that for fifty-four bushels, the price was five shillings, or about one penny and a quarter per bushel.

At that period not only the price of manual labor, but of clerical performances, show the high value of the precious metals.

Thus it was enacted by Henry V., of England, 1417; "That the yearly salary of chaplains shall be £9 6s. 8d., and that of parish priests £12;" and by Edward III it was "ordered that no man shall give a parish priest more than £10 a year, or, in lieu thereof, his board and £4 yearly."

*Maintainance of a Bishop and the Prices of Luxuries in the 14th Century.* In 1305, the Bishop of St. Andrews was imprisoned in the Tower of London for his adhesion to Robert Bruce, and being a personage of high rank and estate, and his maintainance an affair of the government, we may suppose that an extra allowance was made in behalf of such a dignitary. It was as follows :

For the Bishop's table, . . . . .	6d. per day.
For one man servant, . . . . .	3d. " "
For one boy servant, . . . . .	1½d. " "
For a chaplain to say Mass, . . . . .	1½d. " "
Total, . . . . .	12d.



This may be considered equal to sixty cents at the present day. In 1496, Lady Anne, daughter of Edward III, was married to Lord Howard, son of the Earl of Surry. This noble lady was allowed "for her exhibition, sustenance and convenient diet of meat and drink ; also, for one gentlewoman, one woman, one girl, one gentleman, one yeoman and three grooms, in all eight persons, £80 12s. per year, which included their clothing, keeping and wages." Besides this, she was allowed £25 10s. 4d. for the maintenance of seven horses, being about five hundred and twenty-five dollars—a sum which, being doubled, would no more than suffice a merchant's clerk in one of our large cities at the present day, and yet it seems this was the royal allowance for a king's daughter, with her eight servants and seven horses. It may be observed, that the above period was about that of the discovery of America, but we shall see that many years elapsed before the precious metals from New Spain affected the monetary affairs of Europe.

The price of wine, a luxury in which the rich only could indulge, is another proof of the high rate of money at the period in question. This was a foreign article, and therefore its price indicates the value of the precious metals in other countries as well as in England.

It appears that for several centuries, and in various countries, during the dearth of circulating coin, the regulation of prices was exclusively in the hands of the

governments. We have already mentioned many instances of this kind, and when it extended to the absolute necessities of life, as corn and bread, it no doubt bore heavily upon the poor, while it equally favored the rich. It seems, however, that, during several reigns, the nobility of the land were forbidden to pay over a certain price for their wines; such laws probably being all designed to keep the money from passing out of the realm, as well as to prevent the more extravagant from spending their substance for a luxury in which all patricians indulged at that day.

During the reign of Richard II, in 1381, it was enacted that Gascon, Spanish and Rhenish wines should be sold at retail for 1s. 3d. per gallon, and Rochelle wine at 10d. the gallon.

The quantity of this luxury consumed in that age of extravagance, notwithstanding the scarcity of money, if we take certain of the nobility as examples, would be deemed enormous even in these times of plenty. Thus, in Stowe's Survey, is an account from the treasurer of the Earl of Leicester, by which it appears that the annual consumption of wine by that nobleman's household was three hundred and seventy-one pipes, at the cost of £2 10s. 10½d. per pipe.

Now, the average capacity of a pipe of wine is one hundred and twenty gallons, so that the consumption in the Earl's establishment was about one hundred and twenty-four gallons of wine per day.

## CHAPTER XIII.

## EFFECTS OF THE CRUSADES ON THE MONETARY AFFAIRS OF EUROPE.

WE have not yet adverted to the crusades, so intimately connected with the history of the middle ages, as one of the most fruitful sources of expenditure and poverty which existed during the eleventh and twelfth centuries. The attempt to rescue Palestine from the infidels was the monomania of that period; and while the coffers of nearly every prince in christendom were drained to carry on that holy war, thousands of farmers, mechanics, and merchants, putting on the armor of the cross, and seizing the sword of the spirit, marched forward—often they knew not whither—determined upon victory or death.

A detail of the circumstances and consequences of this warfare, it is well known, fill many volumes. But for our purpose it is only necessary to say, that for two centuries there was hardly a family in Europe which did not, in one way or another, feel the effects of what was then considered the most glorious and holy attempt ever undertaken by mortal man. Agriculture, commerce, arts and education were all neglected, and by all ranks, under a common distemper of the imagination, which made the redemption of the Holy Land an object paramount to every duty and every consideration which this world could afford. Many of the Euro-

pean sovereigns left their thrones, and while leading armies of their own people to the seat of war, and thinking only of the glories of victory over the infidels, do not appear to have given a thought to the consequences which were to result from leaving at home, without rulers, and in poverty, the old men, women and children, who were thus to become the prey of those men who were too wicked to join in so holy and just a warfare.

The consequences of such a condition of society on the prosperity and wealth of any nation or country, did not fail to produce the disastrous results which might have been expected. And when we learn from the history of that period that such was the general anxiety to embark in crusades, that kings pledged their jewels and even their crowns—that nobles sold or mortgaged their estates—that churches and monasteries converted their sacred utensils and ornaments into money, all for the purpose of raising funds and equipage for the Holy Land, our imaginations can paint, in some degree, the poverty, and often wretchedness, which remained behind.

The framework of society was in a measure broken up, and the business operations of all classes either deranged or so far interrupted as for a long time to fail of their usual products. Such were the effects of the crusades in Spain, France, Italy, Germany and Britain. Thousands went never to return, and thus a general drain from all these countries, of money, men, horses and equipments, was continued for more than a hundred and fifty years.

It is true, that immense booty was captured and carried away from Jerusalem, and from many other cities, by these holy warriors ; but it does not appear that any considerable amount of these treasures ever found their way to Europe by the remnants of the armies which returned. It will be seen, therefore, that the crusades were among the causes which produced that scarcity and consequent high value of money in Europe, the indications of which have been already detailed.

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## CHAPTER XIV.

### DISCOVERY OF AMERICA AND INFLUX OF THE PRECIOUS METALS INTO EUROPE.

It appears that down to the period of the reign of Henry VIII, of England, who ascended the throne in 1509, the quantity of gold and silver in Europe had been for centuries constantly diminishing, the causes of which we have already sufficiently detailed. It is true, that the rapidity with which this decrease had proceeded, was in a degree prevented in the latter part of that period by the simultaneous exertions of many nations to derive the precious metals from the mines, as already described. But still it appears from the statements of authors on this subject, that there was a gradual decrease of money down to the time specified.

From this period, when the effects of the mineral

treasures of the Spanish mines, in South America, began to be felt in Europe, there was a proportional advance in the prices of all sorts of commodities, and consequently a gradual depression in the value of the precious metals.

It is surprising to observe how speedily the rich availed themselves of the means of luxurious display, when the products of the American mines began to flow in the form of bullion or coin into foreign countries. Thus we find that Cardinal Wolsey, the extravagant minister of Henry VIII., according to Stowe, had the following accommodations, at Hampton Court, for the entertainment of foreign ambassadors and other guests.

Of beds, two hundred and eight were provided for guests. Every chamber had a basin and ewer of solid silver, and some were gilt; yea, and some chambers had two livery pots provided with wine and beer. Every chamber had a candlestick having in it two sizes, yet the cupboards in the banqueting rooms were not once touched. The same chronicler says that, at a feast of the ambassadors, "two cupboards, extending across the banqueting chambers, were piled to the top with plate, and illuminated; and, without encroaching on these repositories, there remained quite enough for the service of the tables." At the downfall of the minister, it appears that his plate was seized and inventoried, by the record of which we learn that the amount was nine thousand five hundred and sixty-five ounces—an enor-

mous sum, when it is considered that silver was at least three times as valuable then as now.

*Small quantity of Gold first obtained from the New World.* There is little doubt but the high expectations of the Spaniards, who, on landing, saw the natives ornamented with pieces of pure gold, were afterwards greatly depressed ; for several years elapsed before any considerable amount of that metal was obtained, either by purchase with toys, or searching in the sands. Many of the natives, it appears, had small quantities of gold dust, which they readily exchanged for ornaments or toys of small value. One of the best articles for exchange was hawk's bells, the poor Indians readily giving a handful of gold dust for a single bell.

It seems that all the gold the natives had, was picked up in the sands of rivers, and of course, without any regular method of searching or washing ; and, although the Spaniards did not fail to obtain every grain in their power by whatever means they could employ, yet from all accounts, this quantity was so small, that Humboldt estimates the amount which America furnished to Europe during the first eight years, from 1492 to 1500, at only about two hundred and sixty thousand dollars a year. This amount was greatly increased afterwards ; but it must be remembered that the vast riches of the South American mines was in the product of silver, and not gold.

We cannot here trace the history of the conquests of Hispaniola, of Peru and Mexico, it being sufficient

for our purpose to state that as soon as the Spanish conquerors found themselves in possession of lands containing gold or silver, they reduced the original inhabitants to a state of the most cruel bondage, requiring them to labor in the mines with only food and clothing sufficient to enable them to work for their masters. Thousands who had always enjoyed the mild and pleasant climates of these sunny plains, were driven to the snowy mountains, where, with little clothing, being benumbed by the cold and worn down by fatigue, their cruel masters had constant recourse to the lash to stimulate them to exertion and prevent them from sinking into torpor, which often ended in death. These were the means by which old Spain derived those immense treasures, which at first made her the envy, then the scorn, and now the insignificant, among nations.

**NATIVE METHOD OF SMELTING SILVER ORES.** Although nothing inferior to gold is at present sought in California, still, silver mines may yet be found in that country. It is on this account that we insert the following simple method of obtaining silver from its ores, which was that employed by the native Peruvians before the arrival of the Spaniards among them.

The smelting was performed in small portable furnaces or cylindrical tubes of clay, made wide and pierced with many holes to admit the air. These holes were both on the sides and at the bottom. In these furnaces the Indians placed layers of silver ore, galena, or ore of lead, and charcoal. Having set the charcoal



on fire, the air passing through the holes quickened the process and made the heat so intense as to melt the silver which run down into a pot below. These furnaces were moved from one place to another as occasion required, and the silver thus obtained from the mountain or mine, was again melted and purified by the natives at their cottages. This latter method was performed thus: the fire being made with charcoal in the clay furnace, in order to obtain a high heat, ten or twelve persons assisted, each with a copper tube, three or four feet long, with a small orifice at the lower end. Standing around the furnace, they all blew through their tubes on the fire, the effect being like that of the modern blowpipe, and thus an intense heat was produced. In this manner, it is said, the natives obtained silver in a tolerable state of purity.

**CONQUEST OF MEXICO.** Cortez finished the conquest of Mexico in 1514, twenty-two years after the discovery by Columbus. The presents he received, as he advanced towards the capital, amounted, according to his own account, to \$375,000, chiefly, if not entirely, in gold; and Montezuma, on taking the oath of fidelity to the king of Spain, was made to pay, in the form of tribute to his conquerors, \$325,000 more. In addition to these sums, it is stated by Bernal Diaz, that the Spaniards took by plunder, on their journey to the Mexican capital, \$400,000—making, in the whole, \$1,097,000. This sum was probably divided among the adventurers, but in how long a time we do not know. But this, as all

our readers know, is only as the dust of the balance when compared with the sums which these ruthless marauders afterwards received, and is only mentioned here to show that the natives had considerable quantities of the precious metals, and must have known something of the art of mining before the arrival of Europeans among them.

**MINES OF CERRO DE POTOSI.** The celebrated mines of Potosi were discovered in 1545, and of their riches every one has heard from the days of his childhood.

Up to the time of this discovery, Baron Humboldt estimates the amount of gold and silver, which the Spaniards had received from the New World, to be equal to about \$85,000,000. (Humboldt, who visited New Spain in person, and who took unwearied pains to arrive at the truth, is considered the best authority on the finances of that country down to the time of his visit in 1803.)

The mine of Potosi is said to have been discovered by an Indian hunter, who, in climbing up a steep place, pulled up a shrub by the roots, about which he observed filaments of pure silver. On further examination, the quantity of silver was found to be enormous, and the fame thereof spreading, there soon sprang up a considerable city near the spot, the inhabitants of which perforated the hill on all sides in search of the precious metal.

From certain documents left by Cobos, secretary to the Emperor Charles V, of Spain, and who had granted

him a per centage on the entire product of this mine, it is inferred that Potosi produced for the first ten years, viz., from 1545 to 1556, an annual income of £440,000 sterling, or \$2,200,000. In the ten years, therefore, the product was \$22,000,000.

The per centage, or impost, which amounted to a fifth of the produce of this mine, was called the *Cobos of Potosi*, from the name of the secretary to whom it was granted for the term of twenty-two years, from 1556 to 1578.

Humboldt procured correct returns of this Cobos for a series of years, but not for the whole period during which the amount is here estimated. But it is supposed that the increased experience, and probably the increased number of the workmen, would warrant the belief that the product of the mine rather increased than diminished, after the first ten years. But, allowing it to be the same as above estimated, then we have from 1556, the end of the first ten years, to 1578, the end of the Cobos, a period of twenty-two years. Estimating these as before, at £440,000 sterling, we have for the twenty-two years the very respectable sum of \$48,400,000.

From 1579 to 1600, being a part of the period during which Humboldt obtained authenticated returns of the mine, it is estimated that the product had increased about £40,000 sterling a year, making an income of £480,000, annually, for twenty-one years; making the amount, for this period, \$50,400,000. Thus in fifty-five

years, that is, from the discovery of Potosi in 1545 to 1600, it appears that this mine alone yielded an amount equal to \$120,800,000. In addition to this sum, that which Cortez received from the Mexicans, as already stated, being \$1,097,000, makes the entire amount nearly \$122,000,000.

Within the above period many silver mines had been opened in various parts of the Spanish possessions in America, but we have no means of ascertaining the income they had produced ; but it is believed that up to the period in question, the amount was inconsiderable, the riches of Potosi having attracted the chief attention of the Spaniards at that time. We shall have occasion hereafter to advert to the number of mines wrought in Mexico and their estimated products.

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## CHAPTER XV.

### EFFECTS OF THE AMERICAN MINES ON THE PRICES OF COMMODITIES IN EUROPE.

IN Chapter X, we have seen that the estimated amount of the precious metals in the Roman Empire, or rather in the civilized world, during the 10th century, had been reduced, according to Mr. Jacob, to about \$170,000,000.

At a later period there arose a general mining spirit all over Europe ; and in addition to this, the news of the

vast quantities of gold and silver found in America, operated as a new incentive to prosecute mining operations in that quarter, so that even before the products of Potosi reached the Old World, it is probable that metallic wealth there was rather increasing than diminishing.

There is no doubt but the high expectations from America had an effect on the prices of commodities in Europe, before there was really any great influx of the precious metals from that country. But the addition of twenty-two millions to the cash capital of the world, thus increasing the amount before existing more than one half, could not but have been sensibly felt, especially in the central parts of Europe.

In order to show the effect which this new impulse had on prices, we will quote the rates of wheat for several years, before and during the period in question.

The Chronicle of Prices shows that wheat for twelve years, from 1551 to 1562, had an average, per quarter, of 8s. 10d. in England. The quarter being eight bushels, the price, it will be seen, was only 1s. 1 $\frac{1}{4}$ d. per bushel. From 1593 to 1602, being ten years, the average was 33s. 3d., and from 1603 to 1612, it was 33s. 4d. Here we see an increase of about fourfold, or 400 per cent., depending, to all appearance, entirely on the increase of the precious metals.

As an example of the advance in rents, we give an extract from a sermon of Bishop Latimer, preached before King Edward VII, 1548, in which he inveighs

against the extravagance and high prices of the times, probably never suspecting that the changes he complains of were owing to the plenty of gold.

Says the Bishop, "My father was a yeoman, and had no landes of hys owne, onely he had a farme of three or four poundes by the yeare at the uttermost, and here-upon he tilled so muche as kept half-a-dozen men. He had walke for a hundred sheep, and my mother milked thirty kyne. He was able, and did finde the king a harnessse, with himself, and his horse. I can remember that I buckled the harnessse when he went to Blackheath field. He kept me to schole, or I should not be able to preach before the king's majestie now. He married my sisters with five pounds, or twenty nobles a-piece, so that he brought them up in godlinesse, and in the feare of God. He kept hospitalities for his poor neighbors, and some almes he gave to the poore, and all this he did of the said farme." Now for the contrast. The bishop proceeds: "while he that now hath it (the farm,) payeth sixteen pounds by the yeare, or more, and is not able to doe any thing for his prince, for himselfe, nor his children, or to give a cup of drinke to the poore." We cannot say how long before this sermon the bishop was a boy, and lived with his father, but the battle of Blackheath, for which it seems he prepared him by buckling his harness, was in 1497, and the rise on the farm from three or four, to sixteen pounds, might have commenced about that time.

These two examples, showing an advance of four

hundred per cent. on two of the prime articles of life, grain and rent, are a sufficient indication of a similar rise in other, if not most commodities in England; and there is reason to believe that in the course of about fifty years, a similar advance took place in all the kingdoms of Europe.

A Spanish author says that he who had one hundred reals before the discovery of America, was as rich as he who had five hundred afterwards. And again, "The great quantity of gold and silver which fell into the hands of the king of Castile caused it to fall one sixth of its value."

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## CHAPTER XVI.

### EFFECTS OF THE INCREASE OF GOLD AND SILVER ON COMMUNITIES.

THE vast additions which are expected to be made to the existing quantities of the precious metals in our country, from the gold regions of California, make it important that we should inquire at this place, what effects will be produced on the prosperity and happiness of our country, provided these expectations are realized. We are aware that this question affords scope for a volume much larger than the one now in hand, but to which we can only devote a page or two.

In reference to the sudden influx of gold on the state

of society, an English writer, speaking of Potosi, makes the following remarks: "It would naturally be imagined, at a time when money was looked upon almost exclusively as wealth, that any addition to it would have been hailed with joy—that every individual and each community would have been gladdened at the knowledge that they were becoming more rich than they had before considered themselves; and this was the feeling. The very reverse of this, however, appears to have been the consequence, for complaints and distress were never so frequent and loud as at the period to which we are now referring."

This state of discontent was, however, no doubt, founded on a false conception of the consequences which were to be derived from the advance of all kinds of property in value. For, although it may not be readily seen, what advantage would accrue to individuals or communities, by a rise in the prices or value of every article bought or sold, provided they all, with the money to be paid for them, advanced in the same relative proportions? Now it is admitted that an exchange of this kind for once, or for a given time, as a week, or a month, taking place simultaneously all over the world, would give no advantage to any man or body of men who bought, sold or exchanged; and yet if we watch the operations of such a change of prices, we shall see that the continuance of this condition of things will ultimately produce effects greatly to the advantage of individuals, communities and countries,



At first, the rise of prices would trouble and alarm those who, for half a century or more, had been in the habit of paying a certain price for a common article, and which, perhaps, for that time, had not varied from one year to another more than two or three per cent., and if it was high during one season, it was of course expected to be lower during the next. The feelings of Bishop Latimer, expressed in his sermon before the king, as above quoted, is an example of the sensation naturally produced by the sudden rise of the common means of living.

But if it is considered that the products of the farm advanced in an equal degree, so that the same quantity of corn would pay the rent of sixteen pounds now, which only paid a rent of four pounds thirty years ago, in what way does the tenant suffer by the change?

But perhaps we cannot do better for the reader, than to give the opinions contained in a book published in the reign of Elizabeth, in 1581, and entitled "*A Briefe Conceipte touching the Common Weale of this Realme of England.*" This book was attributed by some to William Shakspeare, whose name was placed in the title page of a second edition, though there are no grounds of belief that he was the author. It is in old English, and much too long for our purpose, but being a treatise on the consequences of the gold of Potosi on the Realm of England, by a writer evidently of good sense, the matter it contains, founded on what he saw, is perhaps more to our present purpose than anything

imagination could suggest. The contents are in the form of a dialogue between a knight, a landholder, a husbandmen, a merchant, a hatter, and a doctor of divinity. We can give only a summary, with now and then a specimen of the style and manner of the author.

The knight says, addressing the hatter, "All of my sorte—I meane all gentlemen—have greater cause of complainte, now that the pryces of thinges are so risen on all handes that you may better lyve after your degree than we."

The hatter says, "I am faine to give my journeymen two pence in a daye more than I was wont to doe, and yet they say they cannot sufficiently live thereon. And I knowe for truth that the best husbände of these can save but little at the yeare's ende."

The farmer thinks thus: "These enclosures doe undoe us all, for they make us to pay dearer for our land that we occupy, and cause that we can have no land in a manner for our money, to put to tillage, all being taken up for pasture."

All the other professions named make similar complaints, each touching the manner in which these high rates affect his own affairs or business. But these are sufficient.

And now let us examine further into the matter, and see what were the actual and permanent effects of the vast increase of money, which had so elevated prices at the time when the "*Briefe Concepte*" was written.

It is clear, then, that the advance of prices on all the

commodities that were bought and sold must have been alike, with the exception of articles whose prices were affected by peculiar, temporary, or local causes. Thus the same quantity of cloth would purchase a hat, or a gown ; the same measure of corn, except in years of uncommon scarcity or abundance, would pay for a cow or a sheep. The value of all commodities would bear the same relation to each other, as if no change in the quantity of money had existed. The only alteration would be, on the medium by means of which the proportions between the different kinds of articles were adjusted. When any commodities were sold, the buyer would at first complain of the quantity of money he must pay, and that would leave a deep impression on his mind, which would not be removed by the higher price he could obtain for what he sold. All would wish to buy cheap, and sell dear, such being the nature of trading man. And the gratification of these two wishes would finally produce the same result as is set forth in the "*Brief Conception*." Thus every one who produced more than he consumed, would find, at the end of a few years, that his wealth, estimated in money, had increased beyond his expectations. And every one who consumed more than he produced, would in a few years find that his wealth, estimated in the same manner, had diminished more than he anticipated. Now this condition of the two classes would, in the result, evidently increase the aggregate wealth of the community. For the producers would be encouraged to more strenuous

exertions to increase their estates, while the consumers would see the necessity of adopting a greater degree of parsimony to prevent themselves from ruin.

But a larger class than either of the above, in every country, are both producers and consumers, and these would find little or no change in their condition, except so far as there happened to be an excess of price in what they consumed over what they produced, and the contrary.

**EFFECTS ON DEBTOR AND CREDITOR.** While the quantity of money is increasing, and consequently declining in value, those who owe money will gain in the discharge of their debts, a sum equal to the difference between the present and former value. Thus, if one buys a house for one thousand dollars, at a credit of ten years, and in that time the quantity of money in the country is doubled, so that it requires two dollars to pay for the same commodity that one would have bought ten years before, then the house has risen in value two-fold, and is worth two thousand dollars; but the creditor can demand only the original price, and thus the debtor saves, nominally, one half the purchase money, though, in fact he pays the whole.

On the contrary, the creditor, though he receives the whole amount of his purchase money according to contract, yet he finds it of less value by one half than at the time of the sale, because commodities cost twice as much as they did at that time.

The same principle holds with respect to loans of

money on time ; for while its value is diminishing, the rate of interest being the same, the lender gains, while the borrower loses. Thus, when money is scarce, the lender demands ten per cent. interest, which the borrower pays ; but as money increases in quantity, and its value diminishes, it can be had for five per cent. ; the borrower therefore loses, and the lender gains. Thus, if I borrow one thousand dollars at six per cent. for ten years, and, meantime, money so increases that the current value is only three per cent., then I pay double interest, and the lender nominally gains three per cent. above the market value. While money is on the decline in quantity, these principles and rates are reversed ; but there is at present no necessity of examples to illustrate a state of things in theory, which no American now living, who has heard of California, ever expects to see illustrated in practice.

*Permanent Effects of the Increase of the Precious Metals.* We see, from the above principles, that as the quantity of money increases, and its value diminishes, so in proportion will probably be the strife of men for its accumulation. Thus, if a farmer, who had been in the habit of raising a hundred bushels of wheat, for sale, at a dollar the bushel, finds that he can sell it this year, and probably for years to come, at one dollar and fifty cents the bushel, he will plough up another field, and raise two hundred bushels for sale, instead of one as formerly. And this he will do, though he is aware that such is the advance on the prices of other things

that a bushel of wheat now, at one dollar and fifty cents, will buy no more of what he wants for his family than a bushel at a dollar would formerly. But there is a pride and a pleasure, which farmers as well as others feel, in having a good round income, and which in this way is gratified, let the outgoes be what they may. The truth is, that people love to handle money which they can call their own, and this passion is too often the chief motive to industry and enterprise.

Now, during the influx of the precious metals, and while the producer can raise or manufacture, and sell at increasing rates, he contracts habits of industry and economy, being constantly stimulated to renewed exertions, by the accumulations which he has from year to year acquired; and, as communities are composed of individuals, and nations of communities, so this habit of industry and acquirement becomes common or universal, and thus gives character and prosperity to the nation. These habits being acquired, continue long after the exciting causes which brought them into action have ceased, and when there is no longer any prospect of increased prices for the products of labor. Consequently, the result is the permanent and continued prosperity of the country, as shown by the building of houses, the construction of roads, and the development of all those instruments and signs of comfort and refinement which mark the civilization of man.

## CHAPTER XVII.

## GOLD NOT THE CHIEF WEALTH OF A NATION.

WE learn from the above statements and explanations, that gold and silver, under certain circumstances, and when operating as a stimulus to exertion, may be the means of national prosperity. But it must not for a moment be understood that these ought to be, or are the chief desire of individuals or communities which wish well to themselves. On the contrary, the principal wealth of a community or nation never yet consisted in the quantity of gold they possessed. A nation may be wealthy without much gold, but at the present day cannot be so without cities, houses, railroads, canals, bridges, steamboats, ships, colleges, churches, manufactories, and cultivated lands. Gold, therefore, is not wealth; but being in universal request, and of small bulk, is of great value to the world on account of its convenience in carrying on the trade of one community or country with another.

*Cost of Gold.* It is said by those who have studied this subject, that the precious metals have already cost more in their production than their value, or uses in community, ever repaid. And if the amount of human suffering in the earlier, and middle ages of the world, could be reduced to a money valuation, and to this could be added the evils of which gold

has been the cause, in the form of wars, fires, murders, and the derangement of conditions in society, there would be formed a mass of evils, which would weigh heavily against the incentives to industry and the wealth, comfort, and dignity of civilization, which no doubt may be chiefly attributed to the influence of the precious metals.

**COST OF CALIFORNIAN GOLD.** It may, perhaps, be said, that the above estimate of the cost of the precious metals, is contradicted by the known facility and little labor with which gold is procured at the present day ; and that the daily news from California proves that the purest gold can be procured in abundance, by the voluntary exertions of freemen, and that neither slavery nor the lash are any longer required for this purpose.

This, up to the present time, is, in a measure, quite true, and in order to account for a fact so different from what has heretofore existed in the world, it must be remembered that we live in an age of advanced civilization—in a new and free country ; and that no gold region, to be compared for richness and extent with that of California, has ever before been discovered.

But the time has not yet arrived which is to develop the consequences of this discovery on that country, its inhabitants, or the world. Possibly the influx of the quiet, law-loving, or perhaps Christian emigrants, will so preponderate over the vicious, the licentious, and the convicts, who it is said are flocking there



from all nations, that ultimately a confederated State will be formed, which will be regulated by the enforcement of wholesome laws, adapted to the condition of the people. If such a state of things should happen within half a century, which the Great Giver of blessings grant, California will, as a mining country, be a marvel to the whole world.

As a proof of the assertion that gold does not constitute the wealth of a country, we have the example of the region in question. This precious metal, no doubt, exists there in unprecedented abundance; and yet from all accounts, nakedness, starvation, and misery, have already commenced, and no doubt, for years to come, will more and more abound. It is true that there has not yet been time to erect houses, form communities, and establish the comforts and conveniences of civilized life there. But so long as such an abundance of gold exists, that any laborer can attain a quantity sufficient, in a few weeks, to support him in comfort or luxury the remainder of his life, there obviously will be no cessation to the arrival of gold from, or of fortune-seekers in California, and, therefore, no cultivation of the earth, or any of the quiet arts of peace.

If accounts are true, and we have them from those who have gathered the precious metal with their own hands, the moral effects of the present state of affairs in California, aside from the want of a Sabbath, and the ministrations of religion, are greatly to

be dreaded by those who care about such things, and who are looking forward to the time when they hope to see a moral and thriving agricultural population in that country. But when it is known what effects that region, either by its climate or its gold, has had upon certain young men, who, to all appearance, went there with good characters, it will be the prayer of all who wish well to California and its people, that the quantity of gold may prove much less than is now expected. The truth is, that the effects are those of gambling in other parts of the world; and although there is no cast of the die, or turn of the card, on which luck depends, yet the whole is, more or less, a game of chance. One man falls upon a mass of gold, or a rich spot, from which he gains thousands in a day or two, and perhaps in as many days more, the one half of this is squandered or foolishly spent, with the expectation that the same luck will again attend him. Another toils for weeks or months with small success, and finally sinks into despondency, or else indulges in the passions of hatred, envy, or malice against those whose success is greater than his own.

Besides, the very condition of the country, which requires a man to pay eight or ten dollars a day for his board, and as much per week for his washing—where a cigar costs a dollar, a common knife a guinea—a shirt a doubloon, and all the other comforts of life in proportion, is sufficient to produce habits of recklessness or profligacy, at least with respect to the value of money,

which are likely to continue when gold can no longer be obtained without toil and trouble. But enough, perhaps too much, about California. We hope for the best.

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## CHAPTER XVIII.

### WHAT IS THE PROSPECT OF A GREAT AMOUNT OF GOLD FROM CALIFORNIA?

ON this subject it would be hazardous to prophecy, because there are as yet no data on which can be estimated the amount of gold which that region will produce. The mines of the Ural mountains in Russia, at first yielded but a small income, but this increased from year to year, until they returned a yearly product of many millions. A part of this product was obtained by washing, and a part by excavations into the mountain. The latter will probably continue profitable for many years after the former is exhausted.

The truth is, that no judgment can be formed of the quantity of gold a surface mine will yield for a series of years, from the first indications. Some of the Mexican silver mines, after having been wrought for a few years, or for a sufficient time to ascertain their capabilities, are then rented for a given sum, founded on their former products; and if we examine the statistics of many of these mines, we shall


find that for a series of years there is but little difference in their annual profits.

But with respect to auriferous sands, no calculation can be made for a future year, or even for a future month, founded on their past products. Indeed, we have seen, in a former part of this work, that of all the ancient mines which were chiefly alluvial, few, if any, yielded profitable returns for any great length of time. And of all those which were worked during the golden mania of the middle ages, few, if any, except those of Hungaria, continued to yield profitable returns down to the period of the discovery of America. We see, therefore, that the experience of former ages is entirely opposed to high expectations from the long continuance of surface mines. But as formerly stated, the extent and the productiveness of the California gold regions have heretofore had no parallel in the history of gold mines. Yet, in several instances, from the great quantity of the precious metal which was first discovered, the public expectation has not been less than at present, though always destined, in a much shorter period than was expected, to be sorely disappointed.

There is one circumstance, with respect to the Californian mines, which has never before occurred since the lovers of gold inhabited the earth. Heretofore, all mines and mining districts have been under the control of governments or companies, and therefore, of course, have been guarded from the admission of all

except their representatives or servants. On the contrary, the regions in question are open, not only to the entire American confederation, but also to the free occupation of every nation, tongue, language, and color, of the known and unknown world. This is a feature in the history and operation of mining, peculiar to our age and country, and of which the annals of the world contain no parallel example.

Now, with respect to this peculiarity, we cannot avoid the conclusion, (considering the gold-loving nature of man,) that there is a special Providence which restrains our law-makers at Washington from all action on this subject. They see millions of gold, to which the nation have as good a right as to the Capitol in which they sit, departing from our coasts in the hands of strangers and foreigners, and going to enrich the coffers of distant nations, and for which the rightful owners obtain not even a "vote of thanks." But we have not a doubt but this is the wisest course which they could pursue, not only for California itself, but for the nation which they represent; for with respect to the first, there can be no hope of its becoming an efficient and respectable member of our Union so long as it is a gold mine. And in regard to our country, no doubt will exist in the mind of any one who will look into the history of the precious metals, or even read this little epitome of the subject, but we shall receive at least as much gold from that country as will be for the prosperity and happiness of the people of these United States.



## CHAPTER XIX.

## WHAT WILL BE THE EFFECT ON OUR COUNTRY OF DOUBLING ITS CIRCULATING COIN ?

SOME points in this general question have already been answered in regard to other countries, in Chapter XVI. We now propose to show the more permanent and general effects which the influx of the precious metals from the American mines produced on the European states, and particularly on England as the centre of business, civilization, and commerce ; and from which we may infer from analogy, if our existing prospects are realized, what will be the results on our own country.

We have already stated that the products of Potosi nearly doubled in the course of, comparatively, a few years the estimated circulating medium of the world. But it must be remembered that the quantity of money then in existence, would bear but a very small proportion to that which the world now contains, and therefore that the products of California must be far beyond what our present imagination suggests, to bear the same relation to the present amount of coin, that those of Potosi did to that which then existed.

But casting aside all anticipations, we will proceed to show what results have been attributed to the cause in question, commencing at the period specified.

It has already been shown, at Chapter XVI, that at the time when commodities are rising in price, in consequence of the diminishing value of money, there is a constant stimulus to the exertions of the producer, and that there are thus induced habits of industry and economy which are apt to continue long after the causes from which they arose have ceased.

It is true, when the influx of money first began to advance the prices of common articles, there was general discontent—a specimen of which we have given by a quotation from Bishop Latimer's sermon. In another sermon before his Majesty, the same dignitary says, "Notwithstanding so much, which these rich men have, caused such dearth, that poore men, (which live by their labor,) cannot, with the sweat of their face, have a living, all kinds of victuals is so deare—pigges, geese, capons, chickens, egges, and all. These things, with others, are so unreasonably enhansed, and I think verily, that if it thus continue, we shall at length be constrained to pay a pound for a pigge."

If we look into the state of society in England half a century after the Bishop's sermon, we shall find that his prediction was true, and that things did thus continue until a pig cost a pound and more. But we cannot trace in detail the effects of the cause in question on commerce, manufactures, and society, and will therefore end this part of our treatise by an extract from a British author, who has minutely examined the whole subject.

Concerning the products of Potosí, he says, "The quantity of money introduced acted upon the small quantity previously in existence with most powerful effect. It quadrupled this portion of money, and lowered its value as a commodity in the same proportion. In other words, it raised the value of commodities at the rate above stated. In subsequent periods, it will be seen that the larger quantities of gold and silver that were extracted from the mines produced much less effect, because they acted upon larger portions which previously had been accumulated.

"In fact, in no period of the world was the change in all mechanical, agricultural, and mercantile relations and connections in any degree approaching to that which took place between the termination of the fifteenth and the whole of the sixteenth century. In the next century, though more of the precious metals was produced, the change was less extensive ; and it was the same in the century between 1700 and 1800, though the mines yielded still more. The effects of this change have been felt in every quarter of the globe, and have had an influence on the prosperity of the whole civilized race of man—not by the wealth to which the gold and silver amounted, but by the stimulus it began to administer to every branch of industry—by the impulse it gave to physical, mechanical, legislative, judicial, and even moral investigations, and by the attachment it inspired to the sound principles which introduced legal, civil and political freedom."



The vast quantity of the precious metals now in the world, not only in the form of coin, but in that of domestic articles, and also in the various luxuries and ornamental uses to which those metals are now applied, render it quite improbable that the additions of the present age will produce effects at all to be compared with those above described. The condition of man, and his relations to commercial, manufacturing, and financial affairs, are so widely different from what they were at the period when these results were produced, that it is nearly impossible that such changes can again be made in these relations by any probable amount of gold and silver to be added to the quantity now in use.

If, however, the products of the Californian mines should equal the expectations of the world, and should those of Russia increase as heretofore, and the South American mines yield their millions per year, and should the mania on this subject pervade the world, as was the case 800 years ago, and which is not improbable, we may still expect great changes with regard to the value of money, and consequently in the prices of lands and houses, and of all the commodities of trade and commerce in every part of the world.

Were prices to advance according to the rates of which we have given examples, from those now existing, the extravagance of the age, no doubt, would call forth the indignation of many a clerical watchman. And if the good Bishop Latimer could not, without

expressions of warning and regret in presence of the king, foresee that a pig might advance to the price of a pound, what would have been his language, could he have imagined that the same animal could ever have been sold for fifteen or twenty pounds, which would be the case, should prices now advance as they did in his time? And who, at the present day, should prices thus increase, would not be surprised to see the time when he would be obliged to give twenty-five or thirty dollars a barrel for his flour, thirty or forty dollars a week for his board, four or five dollars a day for common labor, twenty dollars a pair for his boots, and in these proportions for every thing else he bought?

But what, in these times, will salaried men do, when many of them complain that they can hardly live on their allowances at present rates? In view of such a contingency, a young clergyman, who has just preached a sermon on California, has requested in behalf of himself and his brethren, that, when these things happen, all who love the gospel, will be so far guided by its precepts as to *remember the poor*.

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## CHAPTER XX.

### CALIFORNIA DIAMONDS.

ALTHOUGH we have not yet heard of any specimens of these stones in the gold regions of California, yet

from the geological character of that country, and the known associations with which diamonds occur, it is by no means impossible but such may be the case. Indeed, there are many reasons, founded on experience, with respect to the localities in which diamonds are found, which render it probable that the regions in question may afford this valuable gem.

There is no doubt but the diamond exists in many places as yet unknown, since it requires much experience to distinguish it from crystals of quartz or topaz. One, therefore, who has no experience, and no suspicion that he is in a country where diamonds are to be found, may see and even handle them, without a thought of their value. It was in consequence of the geological experience of Humboldt, in connection with this subject, that the diamond regions of the Ural mountains, in Russia, were first discovered. At his suggestion, the gold washers were directed to search for diamonds, before any had been found, and when no suspicion existed that it was a diamond-bearing region. The consequence was, that a boy soon after found a diamond of considerable value, and for which he was rewarded by a premium of encouragement. From this time the finding of diamonds became frequent, though not very abundant in that region. But these gems being of various colors, as yellowish, brown, greenish, bluish, and rose red, it is difficult, without an experienced eye, to detect them from common gravel. The finest are, however, of no color at all, and closely

resemble the transparent crystals of quartz so common from Lake George, but which also are found in other places.

In Brazil, where great numbers of diamonds have been gathered, but chiefly of very minute sizes, the method of searching for them is to wash the sand of certain rivers, in the manner similar to that described for gold. The diamonds, being of greater specific gravity than the common sand, sink to the bottom of the dish, and, with the particles of gold, are selected out by the practiced eye of the washer.

But how shall this gem be distinguished by one who has had no experience, and who, in a jeweller's shop, cannot tell it from quartz or French paste? This difficulty can only be overcome by testing such stones as the washer for gold suspects to be diamonds. Let him preserve all those answering to the above description, and test them by cutting glass, or scratching crystals or quartz with their sharp corners. When they are too minute to be held in the fingers, this may be done by pressing the specimen into the end of a little stick of hard wood, and then running it along a piece of window-glass, which, if it is a diamond, it will cut so as to be readily broken apart by the hands. When tried on a crystal of quartz, the diamond will leave a mark which one crystal of that substance will not do on another. But a more distinctive and certain character of the diamond than either of the above, since both sapphire and zircon will cut glass and scratch quartz,

is the form of the crystals, the edges of which, instead of being straight, as in other crystalline forms, are curved or swelled, as shown by figure 2. In small crystals this peculiarity can only be observed by a magnifying glass; and, although they rarely present the four curvilinear faces represented by this figure, yet,

Fig. 1.



Fig. 2.



whatever the number may be, if they are curved, as shown in the cut, it may be known that the specimen is the gem in question. This form may be seen with a glass in the small rough diamonds set in brass and used by glaziers. Another form of the diamond is represented by figure 1. It is an octahedron, or eight-sided solid, with the edges replaced by interrupted, narrow, convex surfaces. These interrupted, convex, or rounded angles, as seen above, are peculiar to this gem.

The diamond breaks, or is crushed with difficulty, and hence a test, sometimes employed, is to place the specimen between two hard bodies, as a couple of dollars, and force them together with the hands. Such pressure will crush a particle of quartz, but will only force the diamond, more or less, into the metal.

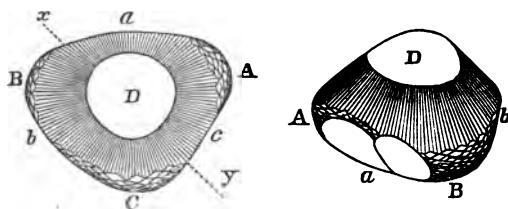
*Diamond Regions.* In India, the diamond mines extend to the distance of hundreds of miles along the

coast of Bengal and Cape Comorin, the chief being in the kingdom of Golconda. These are, however, now mostly exhausted ; and, at the present time, Brazil is the country which chiefly furnishes Europe with diamonds.

*Diamonds of Great Size and Value.* And now, being on this subject, perhaps some of our readers may be curious to see a list of all the remarkable diamonds known, with their estimated prices.

1. The India Company diamond—weight  $89\frac{1}{4}$  carats. It was brought from India, and its value, at the usual rate of estimating large uncut diamonds, being four hundred dollars the carat, is \$3,185,000.

The following figures represent the size and shape of this gem in its original rough or uncut state. The



left is a geometrical view of its upper face ; the right figure is a perspective view, taken in the direction of the dotted lines *x*, *y*, of the left figure. The letters *A*, *B*, *C*, set against the angles, and *a*, *b*, *c*, against the intermediate sides, respectively refer to the same parts in each. In both, *D* marks the flat surface.

2. That of the Rajah, of Mattan, in the Island of Borneo, where it was found about two centuries ago. It is shaped like an egg, with an indentation on the upper end. Weight, 367 carats, or 2 ounces and 169 grains Troy.

For this diamond the Governor of Batavia offered the Rajah the sum of \$50,000 and two large brigs of war, with their guns and ammunition. But this the Rajah refused, the water in which the gem was dipped being considered a cure for all diseases.

3. That belonging to the Queen of Portugal, weight, 11 ounces; the estimated value at \$400 the carat, being \$1,120,000,000. This, if it is a diamond, is the largest known. It is, however, said to be a white topaz.

4. The Pitt diamond, weight  $136\frac{1}{5}$  carats. This was brought from India by George Pitt, and sold to the Regent Duke of Orleans, for \$500,000. It was the same which was set in the hilt of Napoleon's sword, and its value will be seen among the crown jewels of France.

5. That in the sceptre of the Emperor of Russia. This was bought by Count Orloff for Queen Catharine, for \$450,000, and an annuity of \$20,000 a year during the life of the person who sold it. This diamond is of the size of a pigeon's egg, and once formed the eye of an eastern idol. It is said to have been stolen by a French grenadier, who, for this purpose, pretending to turn heathen, became one of its priests.

6. That in possession of the Great Mogul, weight,

two hundred and eighty carats. This is cut and polished. Value, \$3,500,000.

7. That of the King of Portugal, weight 215 carats. Value, \$184,400.

*Inventory of the Crown Jewels of France, according to the estimate of a commission of jewelers, appointed by the National Assembly, 1791. This is not the whole, but the diamonds only.*

	CARATS.	DOLLARS.
1. <i>Le Regent</i> , or the Pitt diamond, . . . . .	136 14-15	2,290,000
2. <i>Le Sauncy</i> , translucent, cut in facets, . . . . .	33 11-16	185,000
3. A sky-blue brilliant, . . . . .	67 9-16	555,000
4. Pear-shaped, peach blossom color, . . . . .	24 13-16	37,000
5. The mirror of Portugal, . . . . .	21 2-16	46,250
6. A brilliant diamond, . . . . .	26 12-16	32,750
7. A diamond cut in facets, . . . . .	28 1-16	46,250
8. A colorless brilliant, . . . . .	14 14-16	32,750
9. A peach blossom brilliant, . . . . .	14 2-16	5,550
10. A brownish brilliant, . . . . .	13 8-16	6,475
11. A yellowish brilliant, . . . . .	11 2-16	1,850
12. A wine colored brilliant, . . . . .	18 9-16	13,875
13. Fifteen brilliants, from 5 to 10 carats each, . . . . .		154,105
14. Small diamonds, 1,631 in number, weighing . . . . .	425	14,287
15. A pale brilliant, . . . . .	31 12-16	55,000
16. An epaulette, with 206 brilliants, . . . . .		8,605
Total value of diamonds among the crown jewels of France, . . . . .		\$3,414,837

The above prices will show the great difference between a colored and a colorless diamond. Thus, number 8 is six times as valuable as number 9, because it is colorless.

*Rules for Estimating the Value of Diamonds.* We have said a few words on this subject, but perhaps not sufficient for our readers who are going to California.

Diamonds are valued by the *carat*, which is 4 grains, Troy. The estimate is made by squaring the number



of carats, and multiplying the result by the price of a single carat: thus the price increases in a multiple proportion to the weight.

The price of a small rough diamond, fit to polish, is \$10 the carat. One of 2 carats, therefore, is worth  $2 \times 2 = 4 \times 10 = \$40$ . One of 4 carats,  $4 \times 4 = 16 \times 10 = \$160$ . One of 20 carats,  $20 \times 20 = 400 \times 10 = \$4,000$ . But it will be seen by the prices in the inventory, that the value increases according to the size of the gem, and its color, or its water, which term refers to its transparency. Thus a diamond of the finest water, of 20 carats, cut in brilliants, like the Mirror of Portugal, is worth at least \$2,000 the carat.

When diamonds are cut and polished, they are known to jewelers as *brilliant*, *rose*, and *table* diamonds, depending on the form and number of these artificial faces. The cutting is chiefly done in Holland, on wheels of copper or iron, with the dust or powder of inferior diamonds. This is called diamond *bort*. They are set without a back, and when worn as head dresses, are placed on black velvet.

Set diamonds may be tested by placing wax on their backs, which will destroy the brilliancy of paste imitations, but will not affect the lustre of the true gem.

The above estimates of value we have stated as we found them in various authorities, and it will be observed that the only invariable part of the rule is to square the carats, the value of each carat being in proportion to the beauty and perfection of the gem.

## CHAPTER XXI.

## INCREASE OF METALLIC WEALTH FROM A. D. 1600 TO 1700.

HAVING described, with as much minuteness as the plan of this work will allow, the effects of the mines of Potosi on the prices of the commodities of Europe, we now proceed to give a summary of the products of other mines in South America.

At the period now under consideration, the mines of Potosi had greatly declined, so that from the immense income of more than two millions a year, the amount towards the close of the sixteenth century became only about \$500,000. But this diminution in what was at first the most productive mine in the world, was more than re-placed by the discovery of other Peruvian mines.

*Gold Washings of Chili.* On the banks of the mountain streams which descend from the Cordilleras, gold has been obtained in considerable quantities by the usual method of washing, but we have no means of finding the amount.

*Mines of Mexico.* The great increase of mineral wealth at the period in question was derived from Mexico. But there are many difficulties in ascertaining, with any degree of precision, the amount which all these mines produced—there having been, at many of them, no records preserved.

The only estimates, it is said, to be relied on, down to

the time of his travels in 1803, are those of Baron Humboldt. But to make the account now to be exhibited the more intelligible to the reader, we must bring under his view a few statements made in the foregoing pages, partly from the estimates of Mr. Jacob.

The quantity of circulating coin in the world, at the period of the discovery of America, is stated in Chapter X to be . . . . .	\$170,000,000
That produced afterwards, deducting for loss, down to 1600, . . . . .	600,000,000
	<hr/>
	860,000,000
Applied to utensils and sent to Asia, which we deduct, . . . . .	210,000,000
	<hr/>
Thus leaving in circulation, . . . . .	\$650,000,000

This is the conclusion of Mr. Jacob; but we must leave our readers to consult his reasonings and statements in order to arrive at this result. Mr. Jacob thus makes the whole stock of gold and silver coin in Europe, at the end of 1599, or the beginning of 1600, as above stated, \$650,000,000.

The same author, in estimating the increase of the precious metals from 1600 to 1700, remarks, that in consideration of all the changes in the circumstances of society, it seems fair to conclude that the proportion of gold and silver in the seventeenth century, which was applied to other purposes than making money, had much increased beyond that proportion which it bore in the 16th century, and which has been estimated in this inquiry at one-tenth. It seems therefore probable, that, instead of one-tenth only being diverted from its application as coin, to that of ornaments and furniture, an assumption may be admitted that this consumption amounts to one-fifth.

In this view of the subject, the addition to the coined money in circulation would have been £244,000,000. But allowance must be made on this sum for the loss by abrasion, at the rate formerly estimated, of one part in three hundred and sixty, annually, which would amount to £34,000,000; thus leaving at the end of 1699, coin in circulation, in addition to what existed at the end of 1599, a sum, which, for clearness, may be thus stated.

Stock of coin left at the beginning of 1600, as above stated, . . . . .	\$650,000,000
Loss by abrasion in a century, to the end of 1699, . . . . .	215,000,000
	<hr/>
	435,000,000
Produce of all the mines in the world for one hundred years, \$1,687,500,000	
Transferred to India and China, (deducted,) . . . . .	166,250,000
	<hr/>
	1,521,250,000
A fifth converted into utensils, (deducted,) . . . . .	301,250,000
	<hr/>
	\$1,220,000,000
Deduct from this for abrasion and loss, . . . . .	170,000,000
	<hr/>
	1,050,000,000
Thus leaving in circulation at the beginning of 1700, . . . . .	1,485,000,000

It will be seen by this estimate that if the stock of coined money in Europe, at the beginning of 1600, be taken at 650,000,000 of dollars, the amount of the same at the commencement of 1700, or during the lapse of a century, would have been increased from the mines to \$1,485,000,000. This addition being equal to \$835,000,000 for the century, amounts to nearly one hundred and twenty-five per cent., or nearly double and a quarter the original sum of \$650,000,000. This is probably as correct a statement as existing data will allow, for whoever will take

the trouble to follow Mr. Jacob, from whom these estimates are derived, cannot but observe the vast amount of labor and research he has expended on these subjects.

*Amount from the South American mines from 1700 to 1803.* The following estimates are from Baron Humboldt, who, as already stated, visited many of the mines on which his statements are made. Of his authority on this subject, Mr. McCulloch, author of the *Commercial Dictionary*, has the following remark: "He was incomparably better qualified for forming correct conclusions as to the past and present productive-ness of the mines, than any of those who had hitherto speculated on the subject."

Humboldt's estimates are made in dollars, and carried out for the year, without giving the aggregate for each period into which the time is divided. These several divisions are necessary on account of the variation of the products, which it will be seen were constantly on the increase.

	Yearly Average.
Product of the American mines from 1700 to 1750, . . .	\$22,500,000
Amount total for fifty years, . . . . .	\$1,125,000,000
From 1750 to 1803, . . . . .	\$35,300,000
Amount total for fifty-three years, . . . . .	\$1,870,300,000
Amount for the century, . . . . .	\$2,995,300,000

Thus, during the century ending in 1800, with an addition of three years, we have the enormous amount of two thousand nine hundred and ninety-five millions, nine hundred thousand dollars, as the product of the South American mines alone.

It will be observed that this is a much larger sum than was supposed, by the estimates given above, to have been in circulation at the beginning of the seventeenth century, this being \$1,485,000,000. If we add the amount produced by the mines as above, viz., \$2,995,900,000, we shall then have the clever sum of \$4,480,900,000. With respect to the products of the mines, it will be observed that we have made no deductions on account of abrasion, and the application to domestic purposes; but that amount being only the issue of the South American mines, without reference to those of the United States and Europe, it is not estimating their resources too high, we think, if we appropriate the sum they produced during the century in question to supply the loss thus occasioned. We then suppose that, at the commencement of the nineteenth century, there was about \$4,480,000,000 in circulation.

From all the investigations we have been able to make on so difficult a subject, this appears to be not far from the truth; though it is but fair to confess that no two authorities which we have consulted come within a million or two of each other in the results of their estimates.

From a table contained in McCulloch's Dictionary, in which estimates are given of the products of the American and Russian mines, we find the result to be equal to the average of \$15,730,000 per year, for the ten years ending in 1829.

Since, and even before that period, many of the Mexican mines have greatly declined in their products, while those of Russia have increased from one year to another with great rapidity. With respect to the diminution of the value of the Mexican mines, perhaps a stronger proof cannot be given than the fact that considerable quantities of the precious metals have been imported from Europe into that country.

Mr. Ward, the British consul to Mexico, states in his work on that country, that in 1825, there was transmitted, as a loan to the government, from the house of Goldsmith & Co., of London, three hundred and ninety-six ingots of gold, and four thousand two hundred and sixty-three ounces of doubloons, amounting together to \$1,636,400, which was recoined and issued by the Mexican government.

This want of money in a country so celebrated for its metallic wealth, arose, undoubtedly, in part, from her revolutionary troubles; but we shall have occasion to show hereafter, that, independently of this circumstance, there is a great decline in the productiveness of the Mexican mines.

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## CHAPTER XXII.

### AMOUNT OF COIN IN CIRCULATION AT THE PRESENT TIME. .

Of the aggregate amount of circulating coin in the world, or even in Europe and America, at this time, it

is impossible for us to give any well authenticated estimate. The subject, indeed, requires more investigation, more patience, and more data than it is in our power to command. And with all the elements which could be obtained, it is not probable that any estimate which it is in the power of the most patient calculator to make, would come within millions of the truth.

We shall therefore content ourselves with recording whatever matter of recent date, with respect to the coinage of different countries, and the products of mines, it is in our power to command.

*Coinage of the United States.* In the Report of Mr. Patterson, Director of the U. S. Mint, rendered to Congress, January 22d, 1849, we have the following heading over the table showing the value of the metals coined in each year, and the aggregate amount of the whole.

*Coinage of the Mint of the United States in the several years, from its establishment in 1792, and including the coinage of the branch mints from the commencement of their operations in 1838."*

We observe that there is a great difference in the coinage of different years, the reason of which we have no means of explaining. Thus, in 1820, the value of gold coined was \$1,319,030, while in 1823 it was only \$72,980. In 1847 it was \$20,221,385, and in 1848, \$3,775,513, and similar differences in the silver and copper occur.



The amount, in value, of the gold coinage from 1792 to 1848, at all the mints, is,	\$76,341,440.00
That of silver, for the same time, is	\$72,466,514.20
That of copper, . . . . .	\$1,909,750.20
The amount of the whole is	\$151,017,704.40
The number of pieces, in all, amount to	343,981,750

Another heading, marked B., in this Report, runs thus :

*“Statement of the annual amounts of deposits of gold for coinage at the Mint of the United States and its branches, from mines in the United States.”*

This, to Americans, is an interesting portion of the document. These deposits commence in 1824, and are from the following places, with the amounts from each. The time is from the above date to 1848, inclusive.

Virginia, . . . . .	\$1,003,180	Alabama, . . . . .	\$49,163
North Carolina, . . . . .	2,995,170	Tennessee, . . . . .	32,396
South Carolina, . . . . .	499,094	New Mexico, . . . . .	683
Georgia, . . . . .	2,333,616	California, . . . . .	44,177

Besides these sums there was received from various sources, not named, but in the United States, \$34,237, making the amount coined, of American gold at the Philadelphia mint, \$7,991,685. To this the several sums coined at the branches are to be added, as follow.

At Charlotte, . . . . .	\$2,033,563
At Dahlonega, . . . . .	3,468,433
At New Orleans, . . . . .	129,377
Total at the branches, . . . . .	\$5,631,373

The total amount of gold, therefore, from the United States mines, is as follows :

Coined at the United States' mint, . . . . .	\$7,991,885
Coined at the branches, . . . . .	5,631,373
Total of American gold from 1824 to 1848, . . . . .	\$13,623,258

This sum, it will be observed, is included in the general amount of \$151,017,714,10 above stated. The amount at the branches has been coined since 1838, at which time they were established.

*Prospects of the American Gold Mines.* It may be observed, from the report of the mint, that there has been a gradual increase of the amount of gold coined from United States sources, though the value in different years varies greatly. Thus, in 1833 it was \$898,000, while in 1839 it was only \$385,240. The largest sum coined in any one year was, however, in 1846, being \$1,139,357. In 1848, the amount was \$899,405, and of this \$44,177 came from California, and 682 from New Mexico.

It would appear, therefore, from the above comparisons, that our ancient gold mines are but little more valuable than formerly; but we have no doubt that another year will show a vast increase of our auriferous products, even without the aid of California or New Mexico. We venture to make this prophecy from the known gold-loving and gregarious nature of our species, and the analogy which exists between the present time and the twelfth century, when the golden mania raged as an epidemic throughout Europe, and of which we have given an account.

At the present time, every person who has occasion to open the earth will be on the lookout for gold,

and every intelligent boy, who has seen the shining particles from California, and is told that they are sometimes found on the banks of rivers, will search the sand, when he goes in swimming, to find the like.

Yesterday we had a call from a clever farmer, who had come with specimens found in the earth last summer, but who never once thought of their containing gold until lately. We told him that for this time he must be disappointed, since the yellow shining particles were nothing more than mica or isinglass. It was, however, agreed, that his neighbors and himself, who expected to make excavations in the earth as soon as the frost is out, should have an eye to this matter, for no one can tell where the gold lies until it is found.

We may expect, therefore, that not only new auriferous places will be found, but that those now known will receive renewed attention, under the stimulus of present circumstances; and no doubt the result will be a great increase of the golden products of our country.

*Color of Auriferous Sands.* We have already stated that the color and appearance of the sands in which surface gold is found, are similar all over the world. These colors vary from yellowish brown to dark brown, passing into nearly black, and in respect to composition, they generally contain more or less oxide of iron.

Such regions, (called by the Spaniards placers, from

the Latin, *placere*, to please, because gold is pleasant to the eye,) are most frequently found in the vicinity of hills or mountains; but that is not always the case, since some localities, where much gold has been found, are at great distances from any high lands. In Brazil the gold occurs chiefly on the banks of rivers; but in Africa the auriferous sands are at great distances from either hills or running streams. From these circumstances it will be seen that geological positions are no certain indications of the presence or absence of alluvial gold.

*Coinage of Great Britain.* A new system of coinage was adopted in England in 1816. Before that time, the counterfeiting of current money, especially of silver coins, had become so common, in consequence of the worn and defaced appearance of the pieces, as to give much trouble to the government. This money often could not be distinguished from pieces of silver which never had been under the die. Since that time it is said that forgeries of this sort have become comparatively rare.

At that time, a pound weight of silver bullion, which had previously been coined into sixty-two shillings, was made into sixty-six shillings, the four shillings being retained by the government as a *seignorage*, or tax on the coinage. The shilling passed at the same value as before, the real difference passing from the hands of the people into the treasury of the nation.

At the issue of the new coinage, it was enacted that

gold only should be a legal tender in all payments over forty shillings, instead of gold or silver which was formerly a tender.

Since the issue of the new coin, at the beginning of 1817, down to 1831, the aggregate amount of gold and silver coined at the British mint was £47,000,000, or \$235,000,000. Of this, much the largest amount was of gold, and this has been the case for a great number of years. Thus, from 1790 to 1831, the value of the gold coined was nearly \$70,000,000, while the value of the silver was less than £10,000,000.

From 1831 to 1837 we have no authentic means of ascertaining the amount of English coinage. But from the last period, the items are contained in Hunt's Magazine for January, 1849. They are as follows :

Coinage of the British mint for the ten years from 1837 to 1847 :

Gold, . . . . .	£34,878,666
Silver, . . . . .	3,329,707
Copper, . . . . .	68,103

£38,276,476, or \$191,362,380.

The greatest amount of gold coined under the new system was in 1821, being £9,520,756, equal to \$47,603,780. The largest sum of gold coined in any one year in the mints of the United States was in 1847, being \$20,221,385. The amount of British coin issued under the new system, from 1816 to 1847, omitting the six years from 1831 to 1837, appears to be as follows :

From 1816 to 1831, . . . . .	£47,000,000=	\$335,000,000
From 1837 to 1847 . . . . .	£38,276,476=	\$191,382,380
	£85,276,476=	\$426,382,380
For the six years omitted by estimate, . . . . .	£19,137,743=	\$95,698,715
	£104,414,219=	\$522,071,095

*Russian Mines.* In 1829 Baron Humboldt, with two associates, M. Rose, and the celebrated microscopian philosopher, Ehrenberg, at the command of the emperor of Russia, made a mineralogical tour to the Ural and Altai mountains. In this journey, they not only discovered new localities of gold and silver, but from the geological features of the country, suggested that at certain localities diamonds would also be found, which accordingly happened.

It was before known that gold and silver were contained in certain places in the vicinity of these mountains, since they had both been obtained in small quantities—the former by washing, and the latter by excavations.

The Russian government, receiving encouragement from the accounts of these philosophers, caused the proper steps to be taken according to their directions, and the result has been that these mountains, especially the Ural, have become one of the most prolific gold regions in the world.

The increase of these sources of gold in extent and amount, has been such, that from the value of about \$10,000 in 1836, they amounted in 1843 to \$18,547,200, since which their products have annually increased. In the last fifteen years the supply of gold from Russia,

and chiefly from these mountains, has amounted to \$65,000,000. In the month of June, 1843, it is stated that \$10,000,000 in Russia gold was received in London, and went to swell the deposits in the Bank of England, which are now \$82,000,000.

The above we give on the authority of the Democratic Review.

The same writer makes the following other statements. The Mexican silver mines being restored to their former productiveness, will yield, at least, \$25,000,000 per annum. The annual supply of gold in the United States being \$1,000,000, and that of Russia increasing at the rate supposed, these two resources, with that from Mexico; will not produce less, during the next fifteen years, than \$575,000,000 of gold. This, we understand, does not include the silver from the Mexican mines.

The same writer states, that in the Bank of France, and the Bank of England, there are at this moment \$60,000,000 of silver, and \$67,000,000 of gold coin, making one hundred per cent. of amount greater than ever before known.

Again, "In Mexico, before the war of independence, there were three thousand mines, producing \$21,000,000 in silver, and \$2,000,000 in gold, annually. This has now dwindled down to \$11,000,000 of both metals, notwithstanding the resources are as great as ever."

The latter clause, concerning the resources, was probably written without consulting the history of the

Mexican mining companies of London, or Ward's Mexico, either of which will convince the reader that many of the mines in that country, owing to their being filled with water, or earth, can never, at least at the present price of silver, be again wrought, except with great loss to the undertakers.

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## CHAPTER XXIII.

COIN IN EXISTENCE IN 1816, WITH THAT SINCE COINED IN ENGLAND,  
UNITED STATES, FRANCE, RUSSIA, AND SOUTH AMERICA.

THIS is mere hypothesis, and is put down here as nothing more. But having spent much time and labor on this subject, we have at command some items, which, being put together, will serve to show the enormous quantity of gold and silver, which we know have been in existence during the above period. We begin with 1816, because that was the time of the new system of coinage at the British mint.

Mr. Jacob, after great labor, has come to the conclusion that the whole stock of coin in existence, at the commencement of 1810, was £360,000,000. Now, if we deduct the loss by abrasion, which, during six years, would be not far from £6,000,000, we shall have, in 1816, the amount of £354,000,000 sterling, as the stock in the world when the British coinage commenced. This is equal to \$1,770,000,000. The amount



of coinage at the United States mint and its branches from 1793, as already shown, is \$151,000,000, and we cannot be materially wrong, if we estimate it, since 1816, at \$100,000,000.

In Ure's Dictionary, the estimated products of all the South American mines, including the period in question, was \$47,000,000 per year, down to 1830. But from that time they yielded only about half their previous amount. If, therefore, we take this sum for the first twenty years from 1816, and one half of it for the next sixteen years, bringing the time down to 1847, and then estimating that one half this amount was coined at all the mints in South America, we shall come as near the truth as our data will permit. This would give \$940,000,000 for the twenty years; and \$470,000,000 for the ten years, making the whole \$1,410,000,000. The half of this being coined, would give the amount of coin during the thirty years, equal to \$705,000,000, for all South America.

With respect to Russia, we have only estimates for fifteen years before the present time, which, being \$65,000,000, we shall put double that sum as undoubtedly within the truth, being less than a quarter of that of England. We have for Russia, therefore, \$130,000,000. The amount coined in France, since 1816, we have no means of knowing; but from certain comparisons on other financial points with respect to England, we shall estimate the amount equal to one half that of England, being, therefore, \$261,032,870. Having thus obtained

all the elements within our command on so difficult a subject, we will bring them together. The whole time for which this calculation is made, is from 1816 to 1847, being for a period of thirty-one years. During this period, the business of all civilized countries, and the commercial transactions of the world, have been constantly and rapidly increasing. The introduction of steamboats, as ocean vessels, has had the effect, when compared with former ages, to bring all the nations of the earth in proximity to each other, or to form the whole world into a single nation; while the construction of railroads is not less important as the means by which the commodities, in different parts of this universal nation, are exchanged with each other. These vast improvements have been made in the world during the period in question, and man being a trading animal, we may well suppose that great quantities of elementary means would be required.

Amount of coin in existence in 1816, . . . . .	\$1,750,000,000
Amount coined by the British Mint, from 1816 to 1847, . . . . .	522,071,145
Amount coined by the United States, from 1816 to 1847, . . . . .	100,000,000
Amount coined at all the Mints in South America, from 1816 to 1847, .	705,000,000
Amount coined in Russia, during the same period, . . . . .	132,000,000
Amount coined in France, estimated at half that of England, . . . .	261,035,572
Estimated amount in existence, coined by the above States, since 1816,	\$3,470,106,717.

In this it will be observed that we do not profess to give the entire circulation in existence, but have only thrown together such items as we could conveniently lay our hands on, with respect to the kingdoms named. Did we suppose that it was near the amount of the en-

tire circulation, we might calculate the loss by abrasion and consumption, for domestic purposes, for the thirty-one years, and thus estimate the amount of the stock now on hand. But when it is considered that no part of this amount has reference to the money of Denmark, Holland, Italy, Austria, Germany or Sweden, which has been coined since 1816, it will be perceived that the above sum total, although enormous, is very far from being the whole. With respect to Russia, her mineral resources have increased tenfold since the beginning of the above period.

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## CHAPTER XXIV.

### CONSUMPTION AND USE OF THE PRECIOUS METALS IN THE UNITED STATES FOR OTHER PURPOSES THAN COIN.\*

HAVING thus thrown together such information as we possess with respect to the coin of different countries, we will now proceed to show what disposition has been made of the precious metals in the United States which have not been coined, and of coined money which has passed out of circulation.

With respect to the purposes for which these metals were used in periods of the remotest antiquity, the

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\* In this estimate we do not include manufactured articles for sale, but only such as are in use.

Scriptures inform us that they were converted into personal ornaments, and were employed in exchanges of property, as they are, and ever have been, to this day.

During the time when the Romans were the most luxurious and extravagant people of which history gives any account, it does not appear that it was customary to convert the precious metals into utensils of domestic ornament or convenience. This has been stated while treating of that period, and proved by the absence of such utensils at Pompeii. On searching the history of the English, who, from the middle ages down to the present time, have ever considered themselves forward of the rest of mankind in every desirable thing, it does not appear that these metals had come into common use as domestic utensils, even among the nobility, until near the time of Queen Anne's reign, about the beginning of the eighteenth century. As luxuries of this kind depend much on the wealth and refinement of the people, their introduction into families for other uses than personal ornament was at first very limited, being confined chiefly to the officers of the government, and the nobility and gentry.

PLATE. It is said that the rich service of plate presented to the heroic Duke of Marlborough, stimulated the wealthy nobility at that period to acts of extravagance, in order to imitate the style and appearance of his table. At that time the products of the American mines had already thrown large quantities of silver into

Europe, so that it was in the power of the rich to indulge themselves in any luxuries of this sort which the fashion of the day required. And it appears from accounts still preserved at Goldsmiths' Hall in London, that at about this period there was a sudden increase of orders for services of plate from various parts of the kingdom.

**SILVER TEA-SPOONS.** The introduction of *tea*, and the almost universal love with which it has been received among civilized nations, has been the means of consuming large quantities of silver in the form of small spoons. These were rare in England before the time of Anne, during whose reign they became not only fashionable among the aristocracy, but were soon introduced into the middle classes, and finally into every family who could afford the luxury of tea. At the present day, in our country, at least in all the northern States, few families are too poor to possess a set of tea-spoons, and in general no female is considered in a proper condition for the married state without the possession of this article of housekeeping.

If the number of inhabitants in the United States be stated at 20,000,000, which is rather below the estimated number for 1849, and the number of families at 4,000,000, thus allowing five persons for each family, we may thus suppose that 3,000,000 of families are in possession of silver tea-spoons. The cost of these, for each set of half a dozen, is from six to ten dollars. One third of these families probably have three sets, or two

dozen, at the cost of thirty dollars, while the other two thirds may have a single set, each at the cost of six dollars. But we will suppose the average to be at the cost of twelve dollars for each of the three millions of families, thus making the amount for tea-spoons \$36,000,000 in the United States. It is believed that no one, who knows the habits and ability of the people in this country, would think this estimate too high.

**SILVER TABLE-SPOONS.** About 1760, it is said that silver table-spoons began to supersede those of wood, horn, and pewter, in England. This improvement, or what was then considered an unwarrantable luxury, was at first confined to the higher classes. These spoons, however, were not only very slight and thin, but of a size little larger than the dessert spoons of the present day, their weight being no greater than that of our heavier tea-spoons.

In the first settlement of this country, a few such spoons were brought over by the more wealthy and respectable emigrants, some of which are kept as relics of antiquity at the present day. But the common people, for a century or more, after the settlement of the country, used spoons of pewter or wood. The latter were made by the Indians, and continued more or less in use, even after the Revolution.

At the present time, silver table-spoons, though fewer in number, are nearly as common as tea-spoons. Their cost is from two to three dollars each; and while some families possess only three, others have three dozen,

and perhaps a few have none at all, still using pewter, iron, or German silver.

We may therefore, perhaps, estimate the number of families possessing silver table-spoons at two millions, each having from three to twelve. But there are fewer families having twelve than three. If, therefore, of the above number, we estimate that 1,500,000 families have each three spoons, at two dollars a spoon, the amount is \$9,000,000, and the other 500,000 twelve each, at thirty-six dollars, then we have \$18,000,000. Thus making the amount, for silver table-spoons in the United States, the sum of \$27,000,000. It is true, that this estimate is hypothetical; but, having consulted several persons of discretion in such things, we see no reason for changing the items in the above calculation.

**SILVER FORKS.** Silver table-forks are articles of comparatively recent introduction. At the commencement of the reign of George III, about 1760, we find that steel and iron forks were still used by the nobility of England, and it was not until the middle, and towards the close of his reign, that this, then esteemed an article of luxury, was common at the tables of the higher classes. But this fashion spread with great rapidity.

In this country, silver forks were seen only at the tables of the fashionable and the wealthy in cities, until within about twenty or twenty-five years. At the present day they are not common, even in country villages; and the old-fashioned merchants and farmers, who indulge in good horses and carriages, continue the

use of steel forks—esteeming silver, for this purpose, as unwarrantable extravagance. In ancient families we often see great silver tankards, silver goblets, spoons, ladles and fruit knives ; but why these marks of aristocracy should so suddenly drop down to steel forks, it is difficult to determine, and why forks have not an equal claim with spoons, to be made of silver, we know not. But the quantity of silver employed for this purpose is not at the present time near so large as that used for either of the above named purposes.

If we take, then, one family in four of the two millions which use silver table-spoons, making the same number which we have estimated to possess one dozen each, then we should have the number of five hundred thousand families, which, by analogy, might be supposed to possess silver forks. But since it is known that many families, which, it might be inferred, from other expensive articles in their houses, would use the article in question, do not do so, it will, perhaps, be nearer the truth, if we estimate such families at two hundred thousand. This would make the number of families that use silver forks equal to three-fifths of those which have one dozen of table-spoons. The value of silver forks is from two to three and a half dollars each ; the average being two dollars and fifty cents. The number in each family may be from half a dozen to two or three dozens. Perhaps the nearest average, for our purpose, will be nine forks to a family. Thus, for silver table-forks in the United States. we have the sum of \$4,500,000.



In this estimate, it will be observed that we have made no allowance for hotels and steamboats, where this article, especially in large city establishments, and in boats of the first class, is in general use. These two sources are also the means of consuming large quantities of silver in the form of spoons, and for which we have made no allowance. We think, therefore, that no one, on reviewing our estimates of the three articles in question, would consider the amounts at all exaggerated. The total amount follows.

Silver Tea-Spoons, . . . . .	\$36,000,000
Silver Table-Spoons, . . . . .	27,000,000
Silver Table-Forks, . . . . .	4,050,000
Total, . . . . .	\$67,050,000

**OTHER DOMESTIC ARTICLES OF SILVER.** The quantity of silver in this country in the forms of tankards, tea-urns, goblets, waiters, coffee-pots, tureens and ladles, it is difficult to estimate the value of, with any degree of certainty. Besides, there are tumblers, cups, and many small articles of silver, which go to increase the difficulty. Many of these articles are confined to the families of the more wealthy, and most of them to the inhabitants of cities. There is a large number of ancient tankards, sugar-bowls and creamers, and perhaps tea-pots and goblets, belonging to families which were once the magnates of the country, and which articles have been, and are still kept as indices of the social position of the original owners. But few of these, however, can be traced to the possession of the early

emigrants, whose chief ornaments and wealth, it is well known, were honesty and intrepidity. Many of these articles were brought by families from abroad, and perhaps others were manufactured in this country before the Revolution.

Some of these utensils, such as tankards or pitchers, are worth forty or fifty dollars a piece, and others eight or ten. Perhaps there are fifty thousand families in the country who possess to the amount of forty dollars each of this sort of plate. We shall therefore estimate the amount at \$2,000,000. With respect to the other articles above enumerated, many of them are of ancient, but more of recent manufacture. Some of these, such as cups or tumblers, are in most families of-fashion in all our large cities. Half a dozen cups or tumblers are in a large number of families, while a smaller number have two or four of the former, and two or three dozen of the latter.

There are, then, probably, fifty thousand families in the country which have half a dozen cups or tumblers. The tumblers probably cost four dollars each, but we will estimate the whole for each family at \$20, making \$1,000,000.

The waiters, coffee-pots, tureens and ladles, are in possession of comparatively few families; but being expensive articles, their aggregate cost is considerable. Some families have one or two of these, but not the whole; and therefore, if the number of families be reckoned at fifty thousand, each having an amount of

\$20, in one or more of these articles, perhaps the estimate will come within the truth. This sum, then, will be \$1,000,000. The aggregate amount of these is—

Tankards, Pitchers and Tea Pots, . . . . .	\$2,000,000
Sugar Bowls, Cups and Tumblers, . . . . .	1,000,000
Waiters, Coffee Pots and Ladies, . . . . .	1,000,000
	<hr/>
	4,000,000
Spoons and Forks, . . . . .	67,050,000
Total, . . . . .	<hr/>
	\$71,050,000

**DINING SERVICES OF PLATE.** The cost of a dining service of course depends on the number of pieces and their sizes, together with the weight and the amount of labor bestowed on the chasing or engraving. We know of a cotton manufacturer who is said to have ten thousand dollars' worth of manufactured silver in his house. But such instances are very rare in this country. There are many families, however, which possess from one to three thousand dollars in this kind of furniture. But the latter are chiefly confined to our large cities; and as only a few occasions occur where the proprietors of such establishments make a full display of their domestic resources, it is difficult to estimate with any certainty their number, or the amount they have of this kind of personal wealth. Besides, it may be that many a table service, which passes for solid silver, is merely plated copper, pewter, or iron. And now, since galvanized goods have come into fashion, many can sport such dining services who would become bankrupts were they compelled to purchase the

same weight of goods at Goldsmiths' Hall. But of such the present estimate has nothing to do, the subjects of plating and electro-silvering being reserved for another chapter.

We have many instances in all our large cities, where individuals have accumulated vast wealth, and in not a few instances it may with propriety be said of them as of those of Tyre, "her merchants are princes."

Now, the estimate in question does not, of course, include any of the articles already named, though many of them, as tureens, goblets, and waiters, may be used with, and perhaps might be considered as forming a part of, the dining service. But there are many who have these articles who do not claim to have a dining service of plate, and it is of the latter only which we are now considering. But perhaps these explanations are sufficient; and now for the estimate, which we are as fully aware as the reader can be, is little better than mere hypothesis.

Suppose, then, of the twenty millions of people in our country, forming four millions of families, that we imagine one thousand such families each to possess a dining service of silver plate, worth, on the average, \$2,500; and two thousand to have an inferior service of the same, worth \$1,500; then we have, for the first class, \$2,500,000; and, for the second class, \$3,000,000; making a total of \$5,500,000. This being added to the total already stated—\$71,050,000—makes \$76,550,000

**WATCHES.** In this country, it is believed that the

number of watches worn at the present day is greater than in any other, with the same number of inhabitants.

Reasons have been given above for believing that of the four millions of families in our country, at least three millions are in the use of silver tea-spoons. We have also stated that, at least in the northern states, no female is considered in a fit condition to be married, until she has at least six such spoons. Perhaps there is more pride than reason exhibited by a female who spends her earnings in silver spoons, rather than in the more necessary articles of housekeeping. But there is many a young woman, who, having earned what she has, claims the right of spending it as she pleases ; and every American knows, that nothing so lightens the burdens of housekeeping, or so meliorates the lonely condition of country life, as now and then a little party at tea, whether at home or at one of the neighbors. And, as tea cannot be served without spoons, we think that there is as much reason as pride in this silver preparation for sylvan life.

With respect to the bearing of this on the number of watches worn by the opposite sex, we have to observe that there exists a sort of equilibrium between the two, the young lady seldom marrying without her spoons, or the young gentleman without his watch.

In every city, as well as in the country, most gentlemen wear a watch, and there is a great number of this class who have no families. But of the three millions of families which we have calculated use silver spoons,

there is at least one person in each who has this convenience. Besides these, there are many men, young or old, belonging to the million of families, which we have not estimated in the silver spoon class, who still wear watches. In the four millions of families, of five persons each, into which we have divided our twenty millions of inhabitants, we may therefore consider that there are three millions of watches. In many houses there are four, five, or six watches, and in others none. We therefore have made the average as above stated; thus making the number of watches three millions. But in addition to these, there are thousands of young men who live at boarding-houses, and serve as clerks, or in other capacities, who have each a lever or lepine. These we shall not add to the three millions already estimated. They go to swell the value, but not the number.

*Estimated Value.* There is scarcely an article bearing the same name which differs so much in value as that in question; for, while the lad who can raise six dollars can have a watch that will *tick*, and a chain that will show, the gentleman, who can afford it, and sometimes he who cannot, does not buy his jeweled golden lever for less than one or two hundred dollars. But it is the gold and silver, the consumption of which we are estimating, and not the jewels, or the time-keeping part of this luxury.

When watches were first used, being then made only at Nuremberg, in about 1500, they were so unwieldly

in size and awkward in shape, that no rustic at the present day would receive such a present, except for the silver it contained. Since that time, this article, now so indispensable, both at sea and at home, has been constantly improving in every respect; but more especially in the time-keeping part, which has become so perfect that longitude, at the present day, is everywhere calculated by the chronometer. But while the labor and the gems which decorate these instruments have of late years greatly increased their value as a whole; the precious metals, forming their shields or cases, have much diminished.

The number of watch cases of gold, made at London and Birmingham, and which amount to many thousands annually, have an average weight of two ounces. This is known from the stamp duty, which the manufacturer pays the government. These are what are called single cased watches—double ones being, at present, of comparatively rare manufacture.

It is stated that a large portion of the wheel-work of these watches is made at Geneva, and brought to England to be cased, so that the duty paid to the government is merely on the cases. With respect to the weight of silver watch cases, Mr. Jacob states that the duty paid to the government is on an average of two and a quarter ounces, troy, per watch.

Many of these watches are worn by our inhabitants, and therefore these require no further calculation with respect to the weight of their cases. But we have

many French and American cases, not weighing, probably, more than  $1\frac{1}{2}$  ounces, and therefore we shall place the average of silver watches at two ounces.

The next question is, what are the proportions between the gold and silver watches worn in these United States?—having already shown, we hope, as near as the case will admit, that the whole number is three millions.

At the present day, it is well known that what are called gentlemen's watches are almost exclusively of gold. In our cities, gold watches are much worn by merchants' clerks, and other young gentlemen, without reference to ability. Ladies' watches, which are now almost as numerous as ladies themselves, and which we have not before mentioned, are generally, as they should be, of the more precious metal.

*Conclusion.* Our estimate, therefore, with respect to numbers, is, that of the watches of the three millions who wear this convenient luxury, one million are of gold and two millions of silver.

Now, the weight of each gold case being two ounces, and the gold 16 carats fine, the price is sixteen dollars the ounce, this being the cost of the English article. But perhaps one half the gold watches worn are of French, American, or Swiss manufacture; and many of those made in Birmingham and London are sold without being inspected, in order to avoid the duty; and these not being sold by weight, are made as light as appearances will admit. Of the one million, then, one half being of two ounces weight, at sixteen dollars



the ounce, the sum is \$16,000,000. The other half being of equally fine gold, but weighing only one ounce each, gives the sum of eight millions—making, for gold watches, \$24,000,000. The silver watches, two millions in number, with cases each weighing two ounces, may be estimated at one dollar the ounce, and therefore the total, for this division of our subject, is \$4,000,000. The amount total, therefore, is—

Gold Watches, 500,000 of two ounces, at \$16 per ounce, . . . . .	\$16,000,000
Gold Watches, 500,000 of one ounce, at \$16 " " . . . . .	8,000,000
Silver Watches, 2,000,000 of two ounces, at \$2 " " . . . . .	4,000,000
Total for Watches, . . . . .	\$28,000,000
For Spoons, Forks, Plate, &c. . . . .	76,550,000
Total, . . . . .	\$104,550,000

GOLD RINGS, GOLD CHAINS, AND BOSOM PINS. Without being minute observers of fashion, or without being a constant frequenter of circles in which its changes are most observable, it is still impossible not to remark how great, though gradual, has been the increased introduction of gold ornaments in the decorations of females. Nor is it the fairest portion of creation only, whose taste for personal ornament goes to swell the amount of the trinkets above named.

Within a few years, we are told by those who manufacture and sell the rings, chains and pins in question, that the demand for them has greatly increased, and not only in respect to numbers, but in the expense of their materials also.

A dealer of long experience in these and kindred ar-

ticles, such as are found in extensive jewelers' shops, has been so kind as to assist the author in forming estimates, with respect to the three articles at the head of this section, and also in regard to many other articles in the line of his business.

**GOLD FINGER-RINGS.** The value of a plain gold ring, it is well known, depends on the weight and fineness of the material; and when it contains a gem, on the price of this, independently of the setting. The object of the present inquiry being merely to estimate the intrinsic or golden value of the article named, it is not necessary here to inquire the prices of the stones with which they are ornamented.

The number of gold rings to be seen on the fingers of that class of young ladies who at the present day attend female seminaries of the first class, is, on the average, from three to six. In many families, therefore, there are from twelve to eighteen gold rings.

With respect to their equivalent value, those of the cheapest kind cost seventy-five cents each, or four rings for three dollars. Of the four millions of families, it is probable that one million have four such rings, at the cost of seventy-five cents for each family, the cost of the whole being \$750,000. This being the million to which we have awarded no silver spoons, they have, no doubt, a proper claim to this small consideration. Besides, if the fingers of this class be noticed, it will be seen that, on certain occasions, no one is without this ornament—many having two. The next class, con-

sisting of two millions of families, residing in town and country, and in a condition to indulge in considerable exhibitions of fashion, may be supposed to possess an average of four gold rings to a family. A large portion of them are worn by young ladies at school. The average of four to the family, at the cost of three dollars for the four, is therefore equal to \$6,000,000.

The remaining one million comprises the more fashionable classes, and in this we must include the males, who indulge in this mark of aristocracy, and do not sport the ornament in question for less than an average of ten dollars for each individual—making the sum, for this class, \$10,000,000. We have, then, for this ornament, the following items :

First named, 1,000,000, . . . . .	\$750,000
Second named, 2,000,000, . . . . .	6,000,000
Third named, 1,000,000, . . . . .	10,000,000
Total for Gold Finger-Rings, . . . . .	\$16,750,000

**GOLD BOSOM PINS.** Like rings, *bosom pins* are very common articles. But unlike that luxury of finery, your bosom pin has a real value aside from the gold it contains. Its very name, suggesting the part where it is worn, and the important service it performs there, indicates its absolute necessity, in addition to the high consideration it has obtained as a conspicuous ornament. The finger-ring is an ornament of neither mechanical, physical, nor, with the exception of the wedding ring, of spiritual use ; but is often highly inconvenient to the wearer. On the contrary, the bosom pin performs an

important mechanical part, since it serves to hold in place the dress of both sexes.

The cost of this useful ornament is from one to eighteen or twenty dollars ; and, although a few individuals possess several, only a single one is exhibited at a time. Although an article of domestic importance, there are many who do not exhibit gold pins, and hence, in view of our present object, must be left out of the estimate.

We may therefore fix the number of families which exhibit bosom pins at three millions. Of these, it is probable that one million have each two pins, at five dollars each, making \$10,000,000. While the other two millions have two pins each, at the value of one dollar—making, for this class, \$4,000,000. Total value, for bosom pins, \$14,000,000.

**GOLD CHAINS.** The use of this ornament claims a very high antiquity, since Moses informs us that Pharaoh put a gold chain about the neck of Joseph, when he made him ruler over his household. It was at that day not only an ornament, but probably a badge of authority also. From that remote period to the present time, gold chains have been worn either as ornaments, or as a convenience in attaching to the person some valuable article, as a watch or an eye-glass.

In our own times chains of this sort are worn by many who claim no higher places in society than their neighbors, and yet there is something in a long, heavy golden chain, which betokens a considerable degree

of self-complacency on the part of the wearer. This arises, in part, no doubt, from the fact that these ornaments are generally of 16 or 18 carat gold, being seldom made of gilded brass or tinsel. Gold neck-chains, therefore, let them be seen where they may, must be considered as having a value equal to their weight of standard gold, besides the cost of making, which is sometimes equal to that of the precious metal itself. With respect to the cost of this article, they can be bought for from six to twenty-five dollars each; and our experienced informant, who knows the object of this estimate, believes that there is one million of families which possess, each, twelve dollars' worth of such chains; while another million, which do not wear chains, have at least four dollars' worth, each, of the old fashioned gold beads. The latter, at the present day, are seldom or never seen among our city dames; but the amount of this article sold shows that great numbers in the country, who have a few dollars to expend in ornaments, choose to possess that which, from their childhood, they have looked upon as a mark of distinction in their mothers and grandmothers.

We have, therefore, one million of Gold Chains, at \$12, . . . . .	\$12,000,000
One million strings of Gold Beads, at \$4, . . . . .	4,000,000
Total, . . . . .	<u>\$16,000,000</u>

In these, as well as in all other articles of manufactured gold, the intrinsic value only, and not the work, is estimated.

**GOLD THIMBLES.** At the present time, thimbles for the finger, (for there are several articles of this name,) are of universal use among civilized nations. They are used by both sexes, although chiefly by females. At what period of the world this article was invented is not known, for it is by no means certain that the fine needle-work of the ancients was done by such thimbles as we use at the present day. But whatever might have been the form and composition of ancient thimbles, no one, in our times, pretends to do nice work without one of gold or silver.

On the delicate finger the gold thimble is highly ornamental, though no one professes to wear it merely on that account. Be this as it may, every female, who is old enough to make use of a needle, is provided with this necessary implement, made of one of the precious metals. From the best statistics we can obtain on this subject, we believe that there are at least five hundred thousand persons in our country who possess, each, a gold thimble, worth, by weight, \$2,50. This gives the amount, for this article, of \$1,250,000.

The more humble, and therefore the more useful class, so far as industry is concerned, have thimbles of silver, which are designed, not for ornament, but for actual service. In the four millions of families, besides the five hundred thousand already estimated above, there is at least one silver thimble in each family, the weight-value of which is ten cents. This, therefore, gives the total value of this article in the United States at \$400,000.

Thus making, for Thimbles of gold, . . . . .	\$1,230,000
Thimbles of silver, . . . . .	400,000
Total, . . . . .	<u>\$1,630,000</u>

*Value of Silver Plate used in the Churches of the United States, chiefly in the form of Communion Services.* This being a subject of interest, we have taken every means in our power, within a limited time, to ascertain as nearly as possible the average value of silver used for the purpose in question, in the churches of each denomination contained in the following list.

For the number of churches, we have depended chiefly on the authority of the Family Christian Almanac of 1849, published by the American Tract Society. In several instances, however, clergymen of the denominations, concerning which inquiry was made, gave a different and generally an increased number from that in the Almanac. In this publication no mention is made of the Universalists whatever, but we have supplied this omission from good authority.

In no instance, where it was in our power to do so, have we failed to consult clergymen personally with respect to the average value of plate in all their churches. In most cases, the reverend gentlemen required time and consideration before they were willing to give even a suggestive reply to so difficult a question. But in all instances, being pleased with a subject so entirely new, at least in relation to our country, there was shown a disposition to give the matter so much atten-

tion as to arrive as near the truth as possible ; and the following estimates are made in conformity to these suggestions.

The question of the proportion of churches situated in cities and in the country, was one of the first made in relation to the general estimate. For it is well known that, of all public buildings, the wealth and pride of cities are first displayed in the magnitude, decoration and furniture of their churches. In this respect the Catholic churches have the advantage of all the other denominations, a large proportion of their religious edifices being in cities or populous villages. Next to the Catholic churches, those of the Unitarians and Universalists are most frequently situated in populous places. Opposite to these, in this respect, are the Baptists and Methodists. Although they have many churches in cities and towns, the great majority of their places of worship are spread throughout the southern and western states, occupying more than any, or perhaps all the other denominations, the agricultural portions of the Union. Between these are the Episcopalians, Congregationalists, and Presbyterians, each having churches, in average proportions, in cities, villages, and in the country. The churches of these denominations are not, like those of the Catholics, chiefly confined to large towns ; nor do they occupy, in so great a proportion as the Methodists and Baptists, the agricultural regions of our country. Of the three denominations in question, it is thought that the Episcopalians embrace a larger



comparative proportion of churches in cities than the Presbyterians or Congregationalists.

There are several denominations mentioned in the catalogue to which we have referred, clergymen or members of which we have had no opportunity of consulting; these, however, being generally small societies, will not materially vary the result, since their church furniture will be apportioned by the analogy they appear to bear to other denominations in respect to the present question.

As already suggested, it will be found in the following estimates that the cost of church furniture bears a direct proportion to the number of congregations situated in and about cities and villages, and those in agricultural districts. It is the moneyed wealth or personal property, therefore, in part, and in part, also, the number of members in a congregation, by which, in most of the denominations, the value of the sacramental utensils is graduated. This principle, or practice, appears to hold in the case of all the Christian denominations of our country, except the Catholics, whose church decorations and furniture have, under equal circumstances, ever been the richest in christendom. We give the following list in the same succession as that contained in the Christian Almanac.

It will be observed, also, in the estimates, that the number of pieces differ in the different denominations. Thus, in the Episcopal, Catholic and Methodist Episcopal churches, the sacred elements are served by the

hand of the minister, at the chancel or altar ; while in the Presbyterian, Congregational, Baptist and other churches, which do not assume the Episcopal form, the elements are served by deacons to the members in their usual places. Hence, in the first division, there are only required, especially in small churches, a single tankard, one chalice or cup, one plate, and a baptismal bowl. Larger congregations are provided with two tankards and two chalices. In the second division, the furniture, where the church is large, consists of two or four tankards, four or six plates, eight or twelve cups, and a baptismal bowl.

In churches of long standing, and especially in cities, the sacramental table is often furnished with highly finished solid silver vessels and plates, the cost of which amounts to a considerable sum. These are frequently the presents of members, whose names and good deeds only are known to the present generation, and whose piety and virtues are yet to remain an example to members of the same, and perhaps many other churches.

In new congregations, on the contrary, and especially those formed in thinly inhabited districts of country, the table is furnished in proportion to the ability of the members. Britannia, plated, or, perhaps, more recently, galvanized ware, composes the sacred furniture.

It is, of course, those congregations only which are furnished with plate, that come within this estimate,

and here, it must not be concealed, there is considerable difficulty ; but we have made such an average, with the assistance above stated, as it is believed will come within the truth.

It is obvious that the price of the several pieces, will depend on their sizes and weight, and on this point, as well as on the different capacities in most common use, we have consulted those whose business has long required a knowledge of the subject.

In the different denominations it will be seen that there is a great disproportion between the churches which are furnished with silver and those which are not. Thus, in the Catholic communion, it appears that no place of worship is without its plate, while in the Methodist and Baptist denominations it is supposed there is only one church in fifty which is thus provided.

In the same denominations, the value of the furniture in question, though of the same material, is quite various, in consequence of the difference in the number and weight of the pieces. Thus the value, in many of the city churches, may be four, five, or eight hundred dollars, and we hear of some, (not Catholic,) that are said to have a thousand dollars worth of silver plate. On the contrary, their less wealthy, or perhaps more humble brethren, in the same neighborhood, may be contented in the possession of this kind of furniture to the amount of one or two hundred dollars; while those in the country

may think themselves equally well served when their places of worship contain only forty or fifty dollars worth of precious metal.

Under these circumstances, the several denominations might be divided into classes, depending on their ecclesiastical wealth ; but aside from the invidiousness of such a distinction, it would be useless in attaining our object, which is simply to ascertain the metallic wealth in our churches. In view of the above facts, therefore, we shall make such an average for each denomination as appears to be nearest the truth. Having made these explanations, we now proceed to exhibit the result of our labors in the following tabular form.

As it would be inconvenient to give the names and prices of the several pieces in the table, it is sufficient to state that silver is worth one hundred and sixteen cents the ounce ; but it is here estimated at only one dollar the ounce, so that the sums in dollars will indicate the ounces in weight. Thus a tankard worth twenty-five dollars is supposed to weigh twenty-five ounces, and a cup of five ounces is worth five dollars. We have already explained with respect to the number of pieces required by different denominations. The value of tankards is from twenty-five to fifty dollars. Of chalices or cups, from five to ten dollars. Plates from five to ten dollars. Bowls from twelve to twenty dollars.

TABLE

Denominations.	No. of churches.	Proportion having plate.	No. churches having plate.	Value in each church.	Amount in dollars.
Episcopal Methodists, .	6,000	$\frac{1}{20}$	120	\$63	\$7,560
Baptists, . . . . .	11,000	$\frac{1}{20}$	220	135	29,700
Presbyterian O. and N. S.	4,000	$\frac{1}{10}$	500	178	89,000
Other Presbyterians, . .	1,500	$\frac{1}{10}$	187	178	33,286
Congregationalists, . . .	1,800	$\frac{1}{10}$	225	178	40,050
Dutch and German Ref'd,	537	$\frac{1}{10}$	67	178	11,926
Protestant Episcopal, . .	1,200	$\frac{1}{3}$	400	160	64,000
Lutheran, . . . . .	1,400	$\frac{1}{3}$	175	178	31,150
Unitarians, . . . . .	244	$\frac{1}{2}$	122	172	20,984
Universalists, . . . . .	800	$\frac{1}{20}$	16	110	1,760
Roman Catholics, . . . .	1300	all	300	1,500	450,000
			300	1,000	300,000
			300	300	90,000
			400	150	60,000
					\$1,229,416

This estimate for the Catholic denomination, which we have from good authority, includes not only churches, but chapels, colleges, convents, schools, and "all other ecclesiastical institutions where the holy sacrifice of the mass is offered up every week, and almost daily in the majority of the places." It is proper to state, also, that in this estimate the prices are what it is believed the articles cost, without reference to their value by weight, which, as already observed, has been the estimate with respect to all the other denominations. From the above amount, therefore, at least one third is to be subtracted in order to place the estimates of the Catholic church on the same ground as the

others. This deduction being made, it appears that the value of silver used for sacred purposes in the Catholic churches is nearly twice as great as the aggregate value of that used by all the other denominations.

Perhaps it will be proper to state the number, kind, and value of the articles supposed to be used by each denomination in the communion service, in order to show why the relative amounts differ. It has already been stated why some churches require a different number of pieces from others.

**METHODISTS.**

1 tankard, . . . . .	\$35
1 cup, . . . . .	8
1 plate, . . . . .	8
1 bowl, . . . . .	12
	<u>\$63</u>

**BAPTISTS.**

2 tankards, . . . . .	\$75
4 cups, . . . . .	32
2 plates, . . . . .	16
1 bowl, . . . . .	12
	<u>\$135</u>

**PRESBYTERIANS.**

2 tankards, . . . . .	\$70
8 cups, . . . . .	64
4 plates, . . . . .	32
1 bowl, . . . . .	12
	<u>\$178</u>

**LUTHERAN.**

2 tankards, . . . . .	\$70
8 cups, . . . . .	64
4 plates, . . . . .	32
1 bowl, . . . . .	12
	<u>\$178</u>

**EPISCOPALIANS.**

2 tankards, . . . . .	\$100
2 chalices, . . . . .	30
1 plate, . . . . .	20
1 bowl, . . . . .	20
	<u>\$160</u>

**DUTCH REFORMED.**

2 tankards, . . . . .	\$70
8 cups, . . . . .	64
4 plates, . . . . .	32
1 bowl, . . . . .	12
	<u>\$178</u>

**UNITARIANS.**

2 tankards, . . . . .	\$100
4 cups, . . . . .	32
2 plates, . . . . .	20
1 bowl, . . . . .	20
	<u>\$172</u>

**CONGREGATIONALISTS.**

2 tankards, . . . . .	\$70
8 cups, . . . . .	64
4 plates, . . . . .	32
1 bowl, . . . . .	12
	<u>\$178</u>

## UNIVERSALISTS.

1 tankard, . . . . .	\$50
2 plates, . . . . .	16
4 cups, . . . . .	33
1 bowl, . . . . .	19
	<hr/>
	\$110

GOLD AND SILVER PENCILS. "The ever-pointed pencil," as the article now under consideration was originally called, if not the most important, was certainly one of the most *convenient* inventions of the age. Those made of silver, if we are correctly informed, came into use about 1820, and were at first advertised and bought, not only as a convenience, but as a curiosity. For who, having never seen any pencil but the common wooden one, which requires the knife every few minutes, could conceive how one could be made, which *never lost its point*! The wiser ones were incredulous on this *point*, and could not believe the truth, until they saw and tried the article. All who saw, were satisfied with its utility, but its price, being four or five dollars, prevented its coming into general use for many years. When it was sold for two dollars, it was considered a cheap convenience, and almost every merchant and his clerks had one. Afterwards, when the price fell to a dollar, and so to fifty cents, those whose dignity eschewed so cheap an article, began to have their pencils made of gold. The old pencils were sold for the crucible, and being much heavier than those of the present day, brought about one dollar each.

But however costly the pencil may be, it becomes a pencil only, when it is furnished with its *lead*. This, therefore, is the important portion of every pencil, and for the one now in question, required, as well as the handle, a new invention. The two, however, must have been simultaneous, as being parts of each other.

The lead itself comes from the principal plumbago mine in the world, which is at Borrowdale, Cumberland, England. It is situated in a hill or mountain, and instead of being worked constantly, like other mines, is opened only once a year, when a sufficient quantity is obtained to supply the world for the year to come, when it is again closed with strong doors, bars, and locks, until the next annual supply is required.

From the time of Queen Elizabeth, it is said that all the fine pencils in the world have been made of the black lead of this mine. The little needle-like pieces in question, on which the "ever-pointedness" depends, are made by being passed through apertures of different sizes.

Although a recent invention, its cheapness at the present time has made it in almost universal demand; so that of the four millions of families in the country, of five persons each, there are many which possess four or five, and we may therefore assign one to each family, making four millions.

The cost of this article is chiefly in its manufac-



ture, the intrinsic value of those now sold being only from twenty to twenty-five cents. But as there are many old ones still in use, worth sixty\* or seventy cents, we place the average value at thirty cents. Thus making the total, for silver pencils, \$1,200,000.

**GOLD PENCILS.** Gold pencil-cases were probably first made for those who, having used the article in the form of silver, and seeing this in plebeian hands, required an instrument, if no better, yet less common and more costly. At first, gold pencils were sold for ten, fifteen, or twenty-five dollars, or more, when containing a gem on the top. Jewelers, indeed, will furnish this article at almost any price demanded. At present, however, the medium price is from five to ten dollars. As in the case of silver pencils, the cost chiefly depends on the labor of making, the average weight of the gold being no more than about two dollars. Within a few years the demand for gold pencils has greatly increased, so that, among many people of standing and fashion, silver ones are no longer seen. Those, therefore, who depend upon preserving their caste in society by an equilibrium of externals, can hardly do so at the present day without the show of a gold pencil.

Among the individuals of our four millions of families, perhaps there are not fewer than one million who possess gold pencils. A dealer in this article informs us that the average value of those now sold is two dollars. We have, then,

Gold Pencils, value . . . . .	\$2,000,000
Silver " " . . . . .	1,200,000
Total, . . . . .	<u>\$3,200,000</u>

**GOLD BRACELETS.** This ornament, now seen on the wrists of many of our ladies, has been alternately in and out of fashion, from that period of the world when Isaac sent wedding presents to Rebecca. But those now in fashion are, perhaps, only a modification of the badge of the ancient and honorable Order of the Garter; which order, it is well known, originated in an accident, which occasioned King Edward III to exclaim to the fair Countess of Salisbury, "Evil to him who evil thinks."

Now, a badge of honor may be transferred from one extremity to another, without at all vitiating the claims of the wearer to the dignity it was originally intended to confer; and, although the one in question has had its *ups* and *downs*, according to the fashion of the times, we cannot avoid giving the fair ones of our day the credit of bringing it up, and placing it where, we think, it properly belongs. Be this as it may, if any portion of our race must wear ornaments—and history tells us of no time when they did not—then we cannot but approve of the bracelet, or *wristlet*, of the present day, as being both appropriate, delicate, and comely; and if we must have fashions—and when did we not?—then who will complain, (except of the expense,) that one so convenient, in its cycle of twenty or thirty years, has reached us just at the time when, if our expectations

are realized, every one who desires to wear this golden bauble will be satisfied? When this time arrives, no one will feign occasion to raise her sinister organ in society, for all wrists will be decorated, until that period when, by *non user*, our aristocracy shall again consign this fugitive decoration to the jewelers' crucible.

The price of bracelets, each, is from five to twenty dollars, and many possess two, not a pair, since they are generally unlike. The medium intrinsic value of gold, in this ornament, is three dollars; and being, at this moment, a general favorite among those who know best how to appreciate personal decorations, there cannot probably be less than one million, or one quarter of the families in the United States, which possess one each. Amount, for bracelets, \$3,000,000.

**SPECTACLES.** It is hardly necessary to say that "this is an optical instrument, consisting of two lenses set in a frame, for assisting imperfect vision." This instrument appears to have been invented during the 13th century, and at the present day has become a necessary article for the aged, and a convenience to the short-sightedness of many of our youth.

What an important invention to our fathers and mothers, who, in the decline of life, often find that their chief comfort of existence depends on the reading of some good, or entertaining book, and who instantly become blind without their spectacles. How Methusaleh and Noah could have been made comfortable, during centuries of old age, without the use of

this instrument, it is hard for us, at the present day, to conceive.

On the contrary, our young myopics, who will rarely be troubled with long-sightedness, even in old age, find their concave lenses, though not absolutely necessary, still a great convenience; since, without them, they are liable to meet their friends without being aware they have done so. To this class the invention is as important as it is to know, or not to know, an old and intimate acquaintance, which, therefore, most often depends on the presence, or absence, of their artificial vision.

**SILVER SPECTACLES.** Our ancestors, in moderate condition, were satisfied with steel, iron, or brass frames to their spectacles, provided they could see well through the glasses. But, like all the cheap and simple customs of former times, these frames gave way to those of silver, as being not only more cleanly but more respectable and becoming to the dignity of age. And thus, even before the Revolution, not only the patricians, but people of the middle classes began to use silver spectacles.

This being an article, not only of convenience, but of necessity to the aged, which form a portion of nearly every family, it will not be unreasonable to allow one pair of spectacles to one half of the four millions of families. But in half a million the frames may still be of steel or brass, and in half a million, of gold. We will, therefore, suppose that one million of families have each

a silver frame, worth, by weight, seventy-five cents—making, for silver spectacles, \$750,000.

**GOLD SPECTACLES.** We have seen, in nearly all our estimates, that articles of small weight, which were formerly made of silver, have been gradually replaced by those of gold. Among these are the frames of spectacles; and if the expectations of thousands with respect to the mines of California are realized, silver will soon become, as in the days of Solomon, “nothing accounted of.” Gold spectacle frames are of recent date. These were at first of heavy, and often of clumsy workmanship, and being commonly made to order, they cost twenty or thirty dollars. They were sometimes made so heavy as to require a little cushion where they rested on the nasal bridge. Most of these patterns, it is believed, have, before this time, been consigned to the melting pot.

At present the making of the gold frames in question is a separate business, and they are now more elegant in appearance, more comfortable, because less heavy, and less costly, by at least one half, than formerly. The price of this article, as now constructed, is from six to twelve dollars, and the average weight of gold in each is four dollars—the additional cost being for the manufacture. Seven-eighths of these are said to be of American workmanship.

Gold spectacles are now quite common. We estimate, therefore, the number who have adopted this ornamental necessity at five hundred thousand indi-

viduals, among the twenty millions of our citizens. The sum total is, therefore, for gold spectacles, at four dollars, \$2,000,000.

**GOLD LOCKETS.** This article has been long in use, and is often of considerable intrinsic value, though more frequently its worth is not on account of the gold, but the relic it contains. For this reason lockets are seldom disposed of in consequence of the changes of fashion, but are kept in families as sacred memorials. Perhaps there are five hundred thousand families, or individuals, which possess lockets worth each two dollars, their cost being from three to fifteen dollars. Value of lockets, at two dollars, \$1,000,000.

**GOLD PENS.** This article, we believe, is of American invention, and when first offered for sale, it was called the "diamond pointed pen;" but it is well known to jewelers and others, that diamonds could never be soldered, or otherwise fixed to the tip of a pen.

The tip, on which the value of the gold pen chiefly depends, is, according to the authority of Sir W. T. Brande, the metal called *rhodium*, which, by the process of refining crude platinum, is obtained in small quantities. Rhodium, for the purpose in question, is probably alloyed with steel. The former is the hardest of metals. It is insoluble in any acid but aqua regia, and is said to combine with steel in all proportions. The two grains forming the tip are fastened on with gold solder.

The gold pen, without the handle, which is generally

of silver, containing a pencil, is of small intrinsic value ; and, having already estimated the value of the silver pencil cases, the pen itself is all that now remains to be taken into account in this instrument.

For authors, secretaries, and others, who desire to write a uniform hand, the value of this pen is hardly to be estimated. The time expended in mending and making quill pens, and of fixing, sharpening, and throwing away steel ones, is thus saved, and in a short time will be a full compensation for the cost of a gold pen, which, at present, is about \$1,50. Of this, five-sixths is paid to the manufacturer, including the tips, which, we are told, cost about eighty dollars the ounce ; but what number of grains, fit for use, this weight contains, is unknown.

The intrinsic value of a gold pen is twenty-five cents, and if we estimate one million in use, the amount will be \$250,000.

**GOLD WATCH KEYS AND SEALS.** Formerly these two articles were in very common use, but at present the latter is comparatively but little worn, nor does every gold watch now have its gold key. The cost of these two articles is from two to five dollars each, while their average value may be stated at \$1,00 each. Perhaps there are one hundred thousand persons who possess gold keys worth one dollar each ; and half this number, viz., fifty thousand, who have seals of the same value, making for watch keys and seals, \$150,000.

**GOLD LEAF AND GOLD FOIL.** It has been the object,

in the estimates heretofore made, to show the value of the articles, if in market, at the usual prices of unwrought gold and silver. But gold leaf, though large quantities are in use, has in this state no market value, its consumption for common purposes being, in most cases, an entire loss. It is said that certain persons in London live by purchasing and burning old picture-frames for the gold they contain; but in this country, except when the gilding is on silver, forming the staple for military ornaments, we have heard of no attempts to regain leaf gold after it had been employed for the usual purposes.

*Estimated value of Gold Leaf and Gold Foil annually manufactured in the United States.*

Places.	No. of factories.	Value of leaf.	Value of foil.
Boston, . . . . .	7	\$48,000	\$30,000
Hartford, . . . . .	1	10,000	25,000
New York, . . . . .	15 to 18	150,000	50,000
Philadelphia, . . . . .	8 to 10	150,000	50,000
Baltimore, . . . . .	1	15,000	15,000
St. Louis, . . . . .	1	7,000	2,000
Pittsburgh, . . . . .	1	10,000	3,000
Cincinnati, . . . . .	1	7,000	2,000
Buffalo, . . . . .	1	7,000	3,000
	36 to 41	\$404,000	\$180,000

In the present instance, therefore, we have obtained from a manufacturer of this article, who possesses much intelligence and a large acquaintance with the business generally, an estimate of the annual production of gold leaf, in all the places where it is made throughout the



country. The foregoing table contains the number of establishments in each city, and the estimated value of leaf produced. All these establishments not only manufacture leaf, but gold foil also—the latter being used exclusively by dentists for filling teeth, and perhaps for some other purposes in their business. The gold leaf is worth about twenty-three dollars the ounce—the foil twenty-seven.

**PLATING AND GALVANIZING WITH SILVER.** It has already been stated that the gold employed in gilding has no market value, being an entire loss. The same is true with the silver used in plating and galvanizing; for although the metal may, in a proportion, be again obtained, by an expert refiner, yet the result seldom or never compensates the cost. Even when dollars are counterfeited by plating, the expense of obtaining the silver exceeds its value. Assayists and refiners, therefore, consider old plated goods as entirely worthless, for any other purpose than that for which they were originally designed. The same is true of the silver thrown on the base metals by the electro-type process; it can never be reclaimed without loss.

The consumption of silver by these two processes, and especially by the galvanic method, is at the present time very considerable, amounting perhaps to many hundred thousand dollars annually. But as there is a large number of these establishments, great and small, in the country, we have at present no data on which

an estimate of the amount of silver thus consumed and lost could be made.

*Estimated amount of the consumption and use of the Precious Metals in the United States for other purposes than coin.*

Silver Tea-Spoons, . . . . .	36,000,000
Silver Table Spoons, . . . . .	27,000,000
Silver Table Forks, . . . . .	4,500,000
Plate, Dining Services, . . . . .	5,500,000
Gold Watches at \$16, . . . . .	16,000,000
Gold Watches at \$8, . . . . .	8,000,000
Silver Watches, at \$2, . . . . .	4,000,000
Communion Silver, . . . . .	1,999,416
Gold Pencils, . . . . .	2,000,000
Silver Pencils, . . . . .	1,900,000
Silver Spectacles, . . . . .	750,000
Gold Spectacles, . . . . .	2,000,000
Gold Watch Keys and Seals, . . . . .	150,000
Silver Pitchers and Tea-Pots, . . . . .	2,000,000
Silver Sugar Bowls and Tumblers, . . . . .	1,000,000
Waiters' Coffee Pots, . . . . .	1,000,000
Gold Finger Rings, . . . . .	16,750,000
Gold Bosom Pins, . . . . .	14,000,000
Gold Chains, . . . . .	12,000,000
Gold Beads, . . . . .	4,000,000
Gold Thimbles, . . . . .	1,250,000
Silver Thimbles, . . . . .	400,000
Gold Bracelets, . . . . .	3,000,000
Gold Locket, . . . . .	1,000,000
Gold Pens, . . . . .	250,000
Gold Leaf, . . . . .	404,000
Gold Foil, . . . . .	180,000
Grand total, . . . . .	\$165,563,416

## CHAPTER XXV.

### OF BANKS AND BANKING.

It is well known that a history of banks and banking systems would require a volume, and yet in a book on

the precious metals, something on so important a subject may, perhaps, be acceptable.

Of the origin and history of banking systems we have no room to speak, and therefore shall proceed at once to show the policy, convenience, and economy of these institutions—having, for this purpose, consulted the most approved authorities.

A bank is an establishment for the custody and issue of money, whether of metal or of paper. They are of various kinds; some being confined entirely to the keeping and passing out of the money deposited by their customers, while others issue notes or paper money of their own.

*Utility of Banks.* Although the precious metals are, in many respects, well fitted to serve as a medium of exchange, yet, for this purpose, they are attended with several inconveniences. It has been calculated that if the currency of Great Britain consisted only of gold, it would amount to sixty millions of sovereigns, which, at a pound sterling each, would make a total sum of nearly \$300,000,000. The expense attending the care and transportation of such a sum, allowing one-fourth per cent. for abrasion and loss of coins, is estimated at \$16,250,000 every year.

In the United States, the bank circulation is upwards of one hundred and twenty-five millions of dollars, and reckoning this sum in silver dollars, weighing an ounce each, we should have an amount of nearly eight millions of pounds; and which, without fur-

ther estimates, it will be seen, would require a vast sum annually, to pay for transportation from place to place, as the trade of the country might demand. Besides this, the loss, by abrasion, on one hundred and twenty-five millions of pieces, if estimated at one per cent. per annum, would reach the annual sum of \$1,250,000.

It is on these accounts that most commercial and civilized nations have devised various expedients to fabricate a portion of their money of less costly and heavy materials than gold and silver, and thus to save the loss consequent on transportation and abrasion ; and of all the substitutes for coin hitherto suggested, that of paper is the most eligible.

In commercial transactions, individuals, instead of discharging their debts by the payment of the precious metals, pay them by signing a bill or draft for the sum, payable in coin at sight, or on a fixed day, by a certain name or house, designated. The solvency of the drawer being understood, this bill, or draft, passes from hand to hand as so much cash, thus serving all the functions of coin, and, at the same time, saving the expense, as well as the risk of loss, by transportation. Such drafts, called bills of exchange, were invented before banks, and their convenience led to these institutions.

By a bank of this description, or a bank of circulation, in our country, is meant an establishment founded by one or more individuals, believed to be possessed of sufficient property for such an undertaking, for the

accommodation of the public with loans. Such a bank, being applied to for a loan of money, does not make the advance in gold or silver, but gives promissory notes, signed by the officers of the institution, by which its faith is pledged to pay on demand, in coin, if required.

The notes of a bank, in good credit, are deemed by the public to be equivalent to an equal amount of coin, and being freely accepted in payment of debts of all sorts, and easily carried, or even conveyed by post, are much more useful to all parties than so much gold or silver. A borrower, therefore, does not scruple to pay the same interest for a bank note of one hundred dollars, or a thousand dollars, that he would for the same amount of coin, for it serves his purpose equally well in paying his debts, or in making deposits in other banks. And if his payment is due at a distance, it perhaps saves him the expense of sending a special messenger with the specie.

Banks, therefore, deal in credit, or obligations to pay, which are mere representatives, or substitutes for coin, but which, in themselves, are of no intrinsic value. Their profits consist in the excess of interest derived from the notes which are issued, over and above the amount of stock, or cash, which their vaults contain ; and also in the use of deposits, for which they pay no interest, and on the amount of which they issue bills, as though this formed a part of their capital stock. The coin, therefore, in this aspect of the system, is entirely useless, being in itself unproductive, but must be kept

on hand, and in readiness, to be exchanged for paper whenever called for.

In this country, the public take care to be informed, from year to year, of the amount of coin which each bank has in its vaults ; for, although no one in the community may expect to employ any thing but paper money in his business, yet he insists on knowing to a certainty that the bills he may hold will be canceled according to promise, if he presents them. And if it ever so happens that this is not done at a moment's warning, the credit of the institution from that time is ruined, unless it is understood that there exists a good reason for temporary suspension. Although the bills of a bank are considered as true and sure representatives of the amount of coin for which they are individually given, yet it is well understood that, if all the issues should be presented for payment at the same time, they could not be redeemed ; for, as above stated, the profits of all institutions of this sort consist in the excess of their circulation over and above their solid capital. They must, therefore, have a greater amount in circulation than specie in their vaults. Suppose a bank has one hundred thousand dollars of capital, all paid in, and locked up in its coffers, in the form of bullion or coin, and that it issues notes to the same amount, then it is obvious that nothing is gained by way of interest, even if every note should go into circulation, since the income thus gained would no more than pay for the loss sustained by the unproductiveness

of the solid capital. The loss, therefore, would be just equal to the expenses of the bank.

It being understood, then, that all banks are sustained by the excess of their circulation over the amount of their coined money, an important question arises with respect to the proportions between the two ; for, in the history of these institutions, it has not unfrequently happened that large sums have been issued, which were sustained by only small means of payment, and this to the loss or ruin of many individuals who happened to possess their bills.

On this subject, the reader may inform himself of the practice or custom of the present time, by consulting the table which follows, showing the amount of circulation, capital, and specie, in all the banks of the United States.

Besides banks of currency, as above described, there are also banks of deposit, for keeping the money of individuals. A merchant, or other person, using a bank of this sort, makes all his considerable payments by drafts upon his banker, and sends all bills due to him, to be presented and duly noted, if not paid. By this means he saves the trouble and expense of keeping a quantity of unemployed capital at home—of receiving coins or notes that are not genuine, and of making mistakes with respect to bills due, or payable. Banks of deposit derive their profits either from their paying no interest on the sums deposited in their hands, as is the case of most of the London banks, or from their

paying a less rate of interest on deposits than that for which they lend money to the public.—*McCulloch's Dictionary of Commerce, and Brande's Encyclopædia, Articles on Banking.*

The following table comprises a list of the banks, the amount of their capital, circulation and specie in the United States :

States.	No. of Banks.	Capital.	Circulation.	Specie.
New York, country, . . . .	144	19,356,000	19,270,000	2,533,000
New York city, . . . .	25	24,003,000	6,967,000	6,574,000
Pennsylvania county, . . . .	34	7,866,000	6,400,000	2,000,000
Philadelphia, . . . . .	14	9,222,000	4,500,000	4,200,000
Ohio, . . . . .	48	5,706,000	8,321,000	2,604,000
Virginia, . . . . .	36	10,502,000	9,308,000	2,990,000
Tennessee, . . . . .	20	8,056,000	3,000,000	1,206,000
Kentucky, . . . . .	16	7,018,000	5,483,000	2,920,000
North Carolina, . . . . .	18	3,225,000	3,070,000	1,290,000
Massachusetts, country, . .	83	13,249,000	10,998,000	658,000
Boston city, . . . . .	26	18,863,000	7,208,000	3,286,000
Georgia, . . . . .	20	5,109,000	3,200,000	1,448,000
Indiana, . . . . .	13	2,062,000	3,900,000	1,084,000
South Carolina, . . . . .	14	11,431,000	2,442,000	681,000
Alabama, Mobile, . . . . .	1	1,500,000	2,311,000	1,097,000
Maine, . . . . .	33	2,959,000	2,536,000	280,000
Maryland, country, . . . .	12	1,887,000	1,510,000	600,000
Baltimore, . . . . .	11	6,973,000	2,104,000	1,832,000
Missouri, . . . . .	6	1,201,000	2,404,000	2,314,000
New Jersey, . . . . .	25	3,750,000	2,700,000	636,000
Louisiana, . . . . .	6	17,663,000	3,514,000	7,252,000
Connecticut, . . . . .	33	8,705,000	4,437,000	462,000
Vermont, . . . . .	32	2,959,000	2,536,000	280,000
New Hampshire, . . . . .	20	1,800,000	1,512,000	144,000
Michigan, . . . . .	3	7,660,000	600,000	200,000
Rhode Island, . . . . .	62	11,023,000	2,842,000	325,000
Delaware, . . . . .	8	1,390,000	500,000	150,000
District of Columbia, . .	4	1,328,000	509,000	150,000
Wisconsin, . . . . .	1	225,000	180,000	120,000
Total, . . . . .	728	\$209,331,000	\$125,233,000	\$49,270,000



## CHAPTER XXVI.

TABLE

*Exhibiting an estimate of the population and property, real and personal, of each State and Territory of the United States in 1847.*

States and Territories.	Population, free and slave.	Amount per head.	Total amount in each State.
Maine, . . . . .	600,000	\$400	240,000,000
New Hampshire, . . .	300,000	"	120,000,000
Massachusetts, . . . .	850,000	"	340,000,000
Rhode Island, . . . .	130,000	"	52,000,000
Connecticut, . . . . .	330,000	"	132,000,000
Vermont, . . . . .	302,000	"	120,800,000
New York, . . . . .	2,780,000	"	1,112,000,000
New Jersey, . . . . .	416,000	"	166,400,000
Pennsylvania, . . . . .	2,125,000	"	850,000,000
Delaware, . . . . .	80,000	"	32,000,000
Maryland, . . . . .	495,000	"	198,000,000
Virginia, . . . . .	1,270,000	"	508,000,000
North Carolina, . . . .	765,000	"	306,000,000
South Carolina, . . . .	605,000	"	242,000,000
Georgia, . . . . .	800,000	"	320,000,000
Alabama, . . . . .	690,000	"	276,000,000
Mississippi, . . . . .	640,000	"	256,000,000
Louisiana, . . . . .	470,000	"	188,000,000
Tennessee, . . . . .	950,000	"	380,000,000
Kentucky, . . . . .	855,000	"	342,000,000
Ohio, . . . . .	1,850,000	"	740,000,000
Indiana, . . . . .	950,000	"	384,000,000
Illinois, . . . . .	735,000	"	294,000,000
Missouri, . . . . .	600,000	"	240,000,000
Arkansas, . . . . .	152,400	"	60,960,000
Michigan, . . . . .	370,000	"	148,000,000
Florida, . . . . .	75,000	"	30,000,000
Wisconsin, . . . . .	215,000	"	86,000,000
Iowa, . . . . .	130,000	"	52,000,000
Texas, . . . . .	140,000	"	56,000,000
Dist. Columbia, . . . .	46,000	"	18,400,000
Oregon, . . . . .	20,000	"	8,000,000
Total, . . . . .	20,746,400		\$8,298,560,000

As this little work is on the history of the precious metals generally, perhaps it will not be out of place, if we insert the foregoing table, showing the estimated value of the property, real and personal, in each State, and so of the United States. People love to know how much their neighbors are worth, and perhaps the same spirit of inquiry will lead to the desire of knowing what amount of property is possessed by a neighboring, or their own, State. It is from the Report of the Commissioner of Patents for 1847.

It is necessary to explain on what principle this table is constructed, which we do in the language of the Commissioner of Patents.

The following is the principle on which the preceding table is constructed. We have obtained the valuation of real and personal property, upon which the taxes are assessed, in the States of Pennsylvania and Ohio for 1847, and that of New York in 1846. To the latter we have added three per cent., being the ratio of increase of population. Making this addition to the valuation of New York, the following are the amounts for the three non-slaveholding states above named.

	Valuation in 1847.
New York, . . . . .	\$634,977,913
Pennsylvania, . . . . .	465,789,951
Ohio, . . . . .	409,897,379
	<hr/> \$1,510,665,243

As the valuation of property, with a view to the

assessment of taxes, is at least twenty-five per cent. below its actual value, we add to the above sum one fourth part, or twenty-five per cent., in order to get at the true amount of property, real and personal, in these three States above named, which is \$371,666,553 = \$1,868,331,553.

The population of the above States, according to our estimate of population, submitted with the crops, is as follows :

New York, . . . . .	2,780,000
Pennsylvania, . . . . .	2,125,000
Ohio, . . . . .	1,850,000
	<hr/>
	6,755,000

Dividing the aggregate amount of property by the aggregate population of the three states, the result is \$279,69 $\frac{1}{4}$  per head.

We have also the valuations of two slave-holding states, Kentucky and Maryland, for 1846. They are as follows :

Kentucky, . . . . .	\$242,398,967
Maryland, . . . . .	177,555,846
	<hr/>
	\$419,945,813
To this sum we add three per cent., the ratio of increase of population, in order to bring it up to 1847, which is, . . . . .	
	12,935,344
And twenty-five per cent. for undervaluation, as in the case of the three free states, which is, . . . . .	
	108,135,789
	<hr/>
Making the whole . . . . .	\$540,678,946

The population of Kentucky and Maryland in 1847, according to our estimate, is as follows :

Kentucky, . . . . .	855,000
Maryland, . . . . .	495,000
	<hr/>
	1,350,000

Dividing the aggregate amount of the property by the aggregate population of the two States we have last mentioned, we have \$400 for each individual.

Now it cannot be supposed that the assessors of taxes in the States of Kentucky and Maryland have over-estimated the property to be taxed. And admitting that they have not under-estimated it, the result would give a little over \$320 per head of the population. Adhering to our belief that property in the States of Kentucky and Maryland would be as likely to be undervalued for taxation as in the States of New York, Pennsylvania, and Ohio; but believing that, in consequence of slaves being subjects of valuation and taxation, more property is visible, and more readily assessed than in the three last, we adhere to the allowance of twenty-five per cent. for undervaluation. We therefore take for the basis of the above the sum of \$400, and apply it to the population of the whole Union. The result is \$8,298,560,000, as shown by the table.

Another important and interesting table constructed by the Commissioner of Patents is the following:

TABLE

*Exhibiting an estimate of the value of the products of labor and capital in the United States, for the year 1847.*

Articles.	Bushels.	Price in dollars.	Value in dollars.
Wheat, . . . . .	114,245,500	1,20	137,094,600
Indian Corn, . . . . .	537,350,000	40	215,740,000
Barley, . . . . .	5,649,460	80	4,519,960
Rye, . . . . .	29,322,500	65	18,994,625
Oats, . . . . .	167,867,000	25	41,966,750
Buckwheat, . . . . .	11,673,500	50	5,836,750
Potatoes, . . . . .	100,950,000	20	20,190,000
Beans, . . . . .	25,000,000	100	25,000,000
Peas, . . . . .	25,000,000	1,20	30,000,000
Tons.			
Hay, . . . . .	13,319,900	8,00	106,559,200
Hemp and Flax, . .	116,207	150,00	17,431,050
Pounds.			
Tobacco, . . . . .	220,164,000	05	11,008,200
Cotton, . . . . .	1,041,500,000	07	72,905,000
Rice, . . . . .	103,040,500	03	3,091,215
Sugar, . . . . .	324,940,500	06	19,496,430
Silk Cocoons, . . . .	404,000	2,00	808,000
Hops, . . . . .	1,510,977	10	151,097
Beeswax, . . . . .	766,530	22	168,636
Gallons.			
Molasses, . . . . .	13,000,000	25	3,250,000
Wine, . . . . .	152,175	1,00	152,175
Straw and Chaff, . .			74,000,000
Pasturage after Crops			7,500,000
7.		Total,	\$815,863,688
Other Articles.			
Products of Orchards, . . . . .			8,853,422
Products of Gardens, 3,000,000 at \$15, . . .			45,000,000
Products of Nurseries, sale of trees, &c., .			724,000
Products of Sheep, wool, 60,000,000 lbs. 30c.			18,000,000
Neat Cattle, sold for beef, . . . . .			40,000,000
Swine, 23,000,000, at \$5, . . . . .			115,000,000
Horses, Mules, and Asses, . . . . .			7,934,250

TABLE—Continued.

Other Articles.	Value in dollars.
Poultry, . . . . .	11,499,180
Produce of the Dairy, . . . . .	41,220,149
Amount of Live Stock and products, . . . .	246,054,578
Products of the forest, wood, game, timber, and furs, . . . . .	59,099,620
Products of the fisheries, whale and all, . .	17,069,262
Capital in trade, profits at 6 per cent., . . . .	23,458,345
Manufactures, all sorts, . . . . .	550,000,000
Mines of metal, coal, and stone, . . . . .	74,170,500
Bank capital, . . . . .	209,331,000
Insurance capital, profits of, . . . . .	25,000,000
Money loaned, profits of, . . . . .	25,000,000
Rents of houses and lands, . . . . .	50,000,000
Professions, law, physic, &c., profits of, . .	50,000,000
Grand total of the value of the products of labor and capital for 1847, . . . . .	\$1,985,293,535

OBSERVATIONS. "In estimating the value, for 1847, of several articles of the above table, the amount, as given by the census for 1840, is assumed as the basis, and 22 per cent. added to that sum, which is the ratio of the increase of population during the last seven years, it being reasonable to suppose that the value of the industry and capital of the Union has increased in proportion to the increase of population." The Commissioner has made many other explanations, which, for our purpose, it is not necessary to copy. Where families are concerned, four millions are allowed, of five persons each, thus making the population of the United States twenty millions.

We insert the following, to show the enormous sums of money required to carry on the machinery of Mon-

archical governments. It exhibits the amount of debts, the population, and the revenues of the five principal governments of Europe.

**ENGLAND.**

Debt, . . . . .	\$4,000,000,000
Revenue, . . . . .	900,000,000
Population, . . . . .	28,000,000

Making the debt thirteen times greater than the revenue, and the indebtedness equal to about \$142 to every soul of her population.

**FRANCE.**

Debt, . . . . .	\$780,000,000
Revenue, . . . . .	192,000,000
Population, . . . . .	35,000,000

Making a debt four times greater than her revenue, and equal to \$22 to each individual of her population.

**RUSSIA.**

Debt, . . . . .	\$300,000,000
Revenue, . . . . .	86,000,000
Population, . . . . .	50,000,000

Making her debt more than three times her revenue, and equal to \$6 for every soul

**AUSTRIA.**

Debt, . . . . .	\$300,000,000
Revenue, . . . . .	100,000,000
Population, . . . . .	37,000,000

Debt, three times more than her revenue, and equal to \$9 for every soul.

**PRUSSIA.**

Debt, . . . . .	\$100,000,000
Revenue, . . . . .	40,000,000
Population, . . . . .	15,000,000

Debt, two and a half times her revenue, and equal to \$7 for each man, woman, and child.

**INCREASE AND DIMINUTION OF THE PRECIOUS METALS FROM THE MINES.** It has been stated in the foregoing pages, that from the time of Imperial Rome down to the twelfth century, there had been a gradual decrease of the precious metals in the world. About that period there was a golden mania which pervaded most civilized nations, but the amount of the metals obtained was only sufficient to supply the demand without much increasing the quantity before in existence. From that time to the discovery of America, there was again a gradual diminution, owing, as before, to abrasion, and the conversion of the metals to other uses than coin.

For about two and a half centuries before 1824, the largest proportions of silver and gold with which the world was supplied, came from Mexico and South America. From 1824, owing to the civil commotions in Mexico and some of the South American States, only one half, or perhaps less than half, their former supplies has been produced down to the present time.

Of the two precious metals, gold came chiefly from Brazil, New Grenada and Chili ; and silver from Mexico and Peru, though each of these countries yield more or less of both metals.

Since the commencement of the present century, although the South American mines have, as above stated, diminished, those of Russia, in the Ural mountains, have greatly increased, so that within the last fifteen years, before the discovery of California, the product of Russia in gold is said to be greater than that of all the world beside. In the United States, the annual amount of gold delivered at the mints has been gradually on the increase for several years. So that even before the discovery of the new gold region, from which so much is expected, there appears to have been no diminution, but probably a gradual increase of the precious metals in the world.

*The following estimate of the total products of Gold and Silver from the mines of America, from its discovery in 1492 to January 1846, is from an article on financial statistics by M. Chevalier of Paris.*



Countries.	Value in dollars.
United States, . . . . .	11,904,000*
Mexico, . . . . .	2,755,218,000
New Grenada, . . . . .	367,064,000
Peru, . . . . .	2,620,368,000
Brazil, . . . . .	856,716,000
Chili, . . . . .	199,020,000
Total amount for 354 years, . . . . .	6,810,290,000

*Annual production of the Gold and Silver mines in America at the present time.  
(From Stryker's Quarterly Register, May, 1848.)*

Countries	Silver value in francs	Gold, value in francs.	Total value in dollars.
United States, . . . . .		6,499,000	1,208,814
Mexico, . . . . .	86,793,000	10,184,000	18,037,722
New Grenada, . . . . .	1,066,000	17,062,000	3,375,528
Peru, . . . . .	25,146,000	2,439,000	5,130,810
Bolivia, . . . . .	11,334,000	1,529,000	2,429,718
Brazil, . . . . .		8,610,000	1,601,460
Chili, . . . . .	7,437,000	3,689,000	2,069,436
Various, . . . . .	4,444,000	1,722,000	1,145,773
	136,480,000	51,434,000	34,952,004

*Annual quantities of Gold and Silver delivered by different countries into the general market.*

Countries.	Silver, value in francs	Gold, value in francs.	Total value in dollars.
America, . . . . .	136,480,000	51,434,000	34,952,004
Europe, . . . . .	26,667,000	4,478,000	5,792,970
Russia, . . . . .	4,604,000	402,864,000	75,789,048
Sunda Islands, . . . . .		16,189,000	3,011,154
Africa, . . . . .		13,778,000	2,564,708
Various, . . . . .	4,444,000	3,444,000	1,467,168
Total in the world,	472,195,000	192,189,000	123,577,052

With respect to the amount derived from Russia, it is proper to state that the products from that country

\* We have already seen that the quantity of United States gold coined at the mints down to 1848, was \$13,641,053.

have increased nearly a hundred fold within the last ten years.

The amount of specie imported into the United States from 1842 to 1847, inclusive, is stated at \$64,207,043; and the amount exported during the same period, \$23,699,043, making the difference in our favor of \$38,608,000.

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## CHAPTER XXVII.

### LONDON MEXICAN MINING COMPANIES.

At the present time, when scores, if not hundreds, of Californian mining or trading companies have been formed, or are now forming, and by which the country, at least for a time, is to lose the services of thousands of our industrious and enterprising young men, it may be well for the public to be informed that the *golden mania*, which now seems to be a universal epidemic, is not without a precedent, even within the memory of man.

But the most important portion of the following account, (and for which purpose it is here inserted,) is that which shows the results of the costly outfits and high expectations in which the seventy-two mining companies of London indulged. It will be seen, from the sudden and enormous rise of the stock, that no doubt was entertained that immense fortunes would be realized, now

that Europeans, with all their scientific skill, could have free access to a land which was believed to be almost every where underlaid by more or less precious metal. Our authority is *McCulloch's Dictionary of Commerce*.

"The *mania* for mining concerns, which raged in London and the empire generally in 1824 and 1825, after the opening of Mexico and other parts of Spanish America to our intercourse, form a remarkable and, we are sorry to say, disgraceful era in our commercial history. Now that the madness is past, we have difficulty in conceiving how men in the habit of sober calculation could be led to entertain such romantic expectations, and to pay such high premiums for shares in distant and uncertain undertakings. We may therefore be excused for appropriating a page or two to the history of an infatuation hardly second to that which led to the South Sea and Mississippi schemes."

The mining companies formed at the outset had some sort of basis for favorable expectations, their directors having made contracts for a number of mines in Mexico, described by Humboldt as having enriched many hundred families. This particularly applies to the Real del Monte Company, whose mines are situated in the mountainous district of that name; to the Anglo-Mexican Company, whose mines are at Guanaxuato, the principal mining quarter in Mexico; and to the United Mexican Company, whose contracts, though far too widely spread, comprise several valuable mines at Zacatecas, Sombrerete, and other parts. These associations

were formed in London early in 1824, and during the spring and summer of that year, their stock, or shares, bore only a small premium; but towards the winter it began progressively to rise, to the surprise of several of the directors, seeing it arose less from any favorable intelligence from the mines, (for the accounts from Mexico merely reported the arrival of the English agents,) than from a blind ardor and spirit of speculation in the public—a spirit which, seeing nothing tempting in our funds, or in those of continental Europe, directed itself to distant objects, and particularly to Spanish America.

It appeared as if our countrymen were about to reap an immediate harvest; to lay their hands on a treasure hid from the beginning of the world. America, it was said, had been discovered, in one sense, about three centuries, but this was the true discovery—the effectual access to its resources. Every new contract for a Mexican mine produced a rise in the shares of the other companies, as if the fresh undertaking must necessarily be a source of profit to others. And the result was, that in January, 1825, the premium on the shares of each of the companies mentioned below, arose from 100 to 500 per cent., although no substantial reason could be given for any advance whatever. It must not, however, be imagined that this rise of price was occasioned solely by the competition of individuals who intended to continue to hold the stock, and to trust to the dividends made by the companies for a return. That this was the case in the first instance, is generally true;

but others, actuated by very different views, speedily entered the field.

A peculiar combination of circumstances, at the head of which must be placed an almost incredible degree of ignorance and folly on the part of a considerable portion of the public, on the subject in question, spread a spirit of gambling among all classes. Many who were most eager in the pursuit of shares, intended only to hold them for a few days or weeks, in order to profit by the rise which they anticipated would take place, by selling them to others more bold and credulous than themselves. The confidence of one set of speculators confirmed that of others. Meanwhile the public gullability, or rather its indiscriminating rapacity, was liberally supplied with food for increased expectations. Company after company was formed without any previous contract for mines; in other words, without any foundation whatever! The plan was, to fix on a district in America understood to contain mines—to form a company bearing the name of such district—to obtain a first installment from the shareholders, and to send out agents, or commissioners, as they were termed, to survey the district, and engage the mines. Such was the case in most of those having the names of districts in South America, subjoined to the present statement. It was the case also of the Hispaniola or St. Domingo Company, formed on the basis of accounts given by Dr. Robinson, of mines wrought in that island some three centuries ago. And yet, clergymen, lawyers, and

even the nobles of the land, were candidates for shares in these miserable bubbles, in the hope of finding some dupe to buy their shares at a premium, but in which most of them were very luckily disappointed.

Such was the incredible folly and madness of that time, and such the blindness which the anticipated glitter of the precious metals created, that *seventy-two* of these companies were formed or projected in and about the city of London alone. Several were also formed in Germany, and we believe a few in the United States.

As the year 1825 proceeded, the mining mania gradually declined, not from any sinking of the prospects of the companies, but from the want of money in London to carry on the business. Speculative merchants had that year made immense importations of cotton, silk, wool, timber, and other articles, and large sums were wanted to pay for these; the banks were drained; discounts were difficult; and in this state of things mining shares and South American stock were brought into market; but the holders found to their consternation that the public had recovered its senses.

The panic of December, 1825, now came upon the mining companies, the merchants, and others who had entered into speculations. The shares of the three principal mining companies, some of which had been at a premium of 500 per cent., fell to par, that is, £100 in money; and no more could be obtained for £100 of the company's stock. This price was maintained for

a considerable time, because most of the parties interested continued to have a favorable impression of the final result of their speculations. Demands were however made on the shareholders, of additional sums, to meet the expenses of their agents in America, and all the pressure of these demands was felt by the unfortunate ones, who found themselves still in possession of mining stock, and who had already suffered greatly by the sudden change of times. In 1826 and 1827, mining shares progressively declined, so that the original stock, which cost £100, could be sold for only £20, or £25 in cash. All the bubble speculating companies now met their fate, and were entirely destroyed, while a few of the original projectors, who had leased some fortunate mines, still maintained their ground.

These comparatively lucky companies, it appears, would have followed the general example, had not the directors been able to enforce further payments, by a resolution of forfeiture in default thereof, of all that had been previously paid by the subscribers. The contract was, that on becoming a subscriber to the deed of the company, the shareholder made himself liable to pay on demand such installments as the directors should require, which were generally £10, until the amount of the share, £100, should be completed. Now, a stockholder who had advanced £50 or £60, naturally consented to pay an additional £10, from time to time, rather than incur the forfeiture of the whole. For those who held only a few shares this was a small matter, but

to as many as had a large amount of this stock on their hands, and had already lost thousands by it, even nearly to their ruin, these installments became a grievous burden. Such often raised the money with great difficulty, being obliged even to sell their family property at great loss, or to prevail on their friends to advance on the shares the amount wanted, which was often done with reluctance, there being no evident prospects of any return from the stock. Resentment would of course have been excited against the directors for bad management, had they not been the heaviest sufferers, the regulations requiring them to hold a certain number, perhaps twenty or thirty shares; but in their blind confidence, many of them had taken two hundred or three hundred, which in many cases resulted in their utter ruin.

*Success of the remaining Companies in Mexico.* It appears that the original projectors of these mining companies were misled by their ignorance, rather than a desire to deceive the public. There had before that time been little communication between England and Spanish America, this being prevented by the monopoly of Old Spain. It was therefore only after the independence of Mexico that such information began to be received. Of the thousands settled in that country, and whom the civil wars compelled to leave, few found their way to London, most of them having either returned home, or settled in Cuba, or in the south of France, and hence little or no information was obtained



from these fugitives. Of the published accounts of Mexico, Humboldt's at that time was the chief, and although that illustrious traveler gave a glowing account of the silver which the mines had afforded, yet his book was not written for the purpose of directing future mining companies, and especially twenty-five years after his visit. It was understood generally that silver mines in Mexico formed the main branch of productive industry in that country, and that many of the inhabitants of Old Spain had risen to great opulence through such means ; but no idea was entertained of the extent of injury which the mines had sustained during the civil wars, nor of the amount of expenditure required to again bring them into a working state. It was however found by the agents of the companies that the natives knew very little about the management of the mines, having been mere laborers, most commonly under hard and unrelenting masters, and that these had either fallen during the revolutionary struggle, or left the country afterwards. The agents therefore found that, although miners could be hired to dig the ore, yet none remained who understood the most important part of the work, that of extracting the silver from it.

The Mexicans, of whom the mines had been leased for certain sums, not depending on their products, had but a single object in view, which was to cause English capital to be circulated in their country, thus giving employment to their people for a time, and bringing their mines into a working state ; in doing which, they

hoped the funds of these strangers would be exhausted, and their contracts given up.

Actuated by these views, they pressed one undertaking after another on the agents of the companies, who, hoping for great results in the end, engaged too large a number of mines, and working them with no experience, and as though their funds were unlimited, expended the latter in the hope that the mines would soon make ample returns. But the products, though they increased with the experience of the undertakers, were comparatively small, from the imperfect manner in which the metal was extracted from its ore.

The superintendants, so far from having had experience in the art of mining at home, were many of them entirely ignorant of the business, having never entered, or even seen a mine, before their arrival in Mexico. Some were officers, either *naval or military, on the half-pay list*, whose habits, whatever might have been their personal merits, were very different from those required for such duties. The truth seems to be, that the directors at home, hearing of the abundance of silver in Mexico, concluded that a sufficient quantity could be found with little experience or trouble, and hence, provided that their agents were honest men, with sufficient vigilance to superintend the business, that nothing more was required; but in this, it appears, they were in an error, which cost the companies vast sums of money.

The expense of conveying the requisite mining ma-

chinery from the coast of Mexico to the mines, often at great distances, absorbed much capital. The country has few practical roads; and draught carriages were, at least then, almost entirely unknown, while labor was high, and the people unskilled in the mechanical arts, so that carpenters, blacksmiths, and engineers, had to be transported from home at a heavy expense.

*Magnitude and Expenses of some of the Mexican Mines.* But, during the present mining, or gold-seeking mania—and which, we are afraid, will as far excel that above described, as Americans excel the cold, calculating English, in ardor and enterprise—perhaps it may be well to point out, more particularly than we have done, some of the causes of failure which they experienced. This we do for the purpose of showing that the profits of mining for the precious metals, even in a country said to possess three thousand mines, have ever been small, when compared with the results of the same amount of labor and money expended in other pursuits. In Mexico, the business of excavating the earth for her treasures, has been, from the first discovery of the country, the chief employment of her inhabitants, and their entire source of wealth. All the world has heard of the riches of these mines, and it is true that vast amounts of the precious metals have been derived from them; but there are few who know at what expense they have been obtained. By expense, we here mean labor and money; for, if human suffering could be represented by the latter,

no man would be able to estimate the annual expense of these mines, especially when in the hands of the Spaniards.

The causes of failure depended on a great many circumstances besides those already mentioned, and which, as will be seen, combined to raise the expenses of working the mines to great amounts, and, for many of these, the companies were entirely unprepared—a good lesson for those who undertake a business in which they have had no experience, and for which they had no qualifications.

These mines are all below the surface of the earth, and some of them at great depths, and the expense of making adits and excavations, either new, or where they had caved in since they had been worked, was sometimes immense. To the use of steam engines, the want of fuel was, in many instances, a complete barrier, there being large tracts of country without a single tree; and, had the fuel been abundant, the engines would have required the construction of roads for their transportation. If mules were substituted for steam, still the difficulty was not diminished—since, in some cases, no food could be obtained for these animals, and in others, no water. In many instances the agents found that great labor and expense had been formerly incurred, which were of no value. Thus, at one of the mines, an adit, which had been cut two thousand feet into the mountain, and seven hundred feet below the surface, was nearly useless, because it opened above

the bottom of the shaft, and thus failed to operate as a drain, for which purpose only it had been constructed. Of course these large expenditures increased the rents of the mines, whether useful or not. The expense of the famous Real del Monte mines to the English company, may be inferred from a few items which we extract from Ward's Mexico. The excavation, called Moran, formerly required six hundred mules in conveying the ore over the mountain to the place where the metal was extracted. The company, to avoid this expense, constructed a road for the conveyance of steam engines to the mines, which were transported from Vera Cruz, at, of course, a great expense. But the situation being such as to admit of their use, this new experiment succeeded. They also constructed a new adit, three thousand and six hundred feet in length; the whole expense of putting this mine into working order being \$2,000,000. It appears that all this labor and expense was incurred in anticipation of returns, of which there is, by no means, any certainty.

The Del Monte mine formerly yielded a vast income, since, it is said, that the ancient proprietor, in twelve years, drew from it, in clear profit, the amount of \$6,000,000, and gave to Charles III, of Spain, two ships of war, each of one hundred and twelve guns, built of the most costly materials, and for which he was created a Count. At present it does not pay for working.

The Valenciana mine, also occupied by one of the

London companies, was worked in the 16th century. The labor and expense which the Spaniards had laid out on this mine was also immense. The excavated road, through which the ore was brought, is about half an English mile in length. One of the shafts cost \$396,000, and another \$700,000 ; but both were found insufficient, and a new one, called the octagon, was commenced in 1801, and, after twenty years' labor, at an expense of \$100,000, attained the depth of nearly thirteen hundred feet. When the English company took possession of this mine, it contained nine hundred feet of water, which, of course, had to be drained, before any of the ore could be extracted. Besides, it was found that the timber, which had supported the interior, had decayed, and, in many parts, the earth had caved in. Steam engines could not be employed at this mine, for want of fuel, and therefore mules were the only power that could be used to raise the nine hundred feet of water it contained. In eighteen months the expenses of the company, on this mine, were nearly \$700,000 ; and, at the time of Mr. Ward's visit, there were strong hopes of ultimate success, and large returns, though nothing then had been realized, and doubts existed whether the shaft could ever be drained by animal power, the difficulty constantly increasing in proportion to the depth. These are examples of the difficulties and expenses which the companies in question experienced in nearly every instance, though it is proper to state that the above named, being the deep-

est, and most important of the mines in their hands, required proportionate exertions and expenditures.

To what extent the London companies, still occupying mines in Mexico, have been successful, we have no means of determining. It is estimated that the number of mines in that country, as above stated, amounts to three thousand ; but it is believed that a large portion of this number have long since ceased to be profitable, and therefore have been abandoned. Only a very few of these have ever been wrought by Englishmen, while the Mexicans themselves, since their political revolution, have, to a considerable extent, resumed their wonted business of extracting the precious metals. We have seen that the former income from these mines has been estimated at about \$25,000,000 yearly. From Mayer's Mexico, we learn that the annual coinage in that city amounted to about \$12,000,000, annually, for a number of years, previous to 1843. This, we infer, is not exclusive of the incomes of the London companies.

The following table shows, at a glance, the fate or success of the London companies, which actually went into operation in Mexico. The whole number, as stated near the commencement of this article, amounted to seventy-two ; but, so far as we have been able to learn, the seventeen to be named were the only ones which took possession of mines. The remaining fifty-five were broken up and dissolved, at the time when that immense bubble, founded by these companies,

burst, spreading desolation and ruin among thousands, as already described.

*English Mining Companies connected with America, which are still carried on.*

UNITED MEXICAN,  
REAL DEL MONTE,  
ANGLO-MEXICAN,

MEXICAN,  
BRAZILIAN,  
COLUMBIAN.

The amount of capital invested by the above six companies, is about \$25,000,000.

The following list of English Mining Companies includes the above. It shows the number of shares in each, the sums paid, the dividends, &c. It is an instructive commentary on the prices of 1825. It was published by Mr. Edmonds, broker, of London, in 1833.

Mining Companies.	No. of Shares.	Am't of shares.	Average cost per Share.			Price of Shares.	Dividends per annum.		
		£	£	s.	d.	£ s. d.	£	s.	d.
Anglo-Mexican, . . . .	14,000	100	100	0	0 paid.	12 0 0			
Bolanos, . . . . .	2,000	150	150	0	0 —	132 10 0	11	0	0
Bolivar, . . . . .	10,000	50	20	0	0 —	13 0 0			
Brazilian, £5 premium, .	10,000	35	25	0	0 —	58 0 0	7	10	0
Brazilian, . . . . .	7,058	15	1	10	0 —	5 0 0			
Brazilian, National, . .	6,000	25	20	0	0 —	23 10 0			
British Iron, . . . . .	20,000	50	50	0	0 —	27 10 0			
Colombian, . . . . .	10,000	55	51	10	0 —	12 15 0			
General Mining, . . . .	20,000	20	11	0	0 —	9 0 0			
Hibernian, . . . . .	2,204	50	10	0	0 —	3 10 0			
Real del Monte, . . . .	11,582	64	64	0	0 —	55 0 0			
United Mexican, . . . .	30,000	40	40	0	0 —	13 0 0			
Ireland Mining Co. . . .	20,000	25	5	10	0 —	1 5 0			
St. John del Rey, . . . .	5,000	20	10	0	0 —	6 0 0			
English Mining Co. . . .	2,850	25	12	10	0 —	28 0 0	2	0	0
Mexican Co. . . . .	6,155	100	48	0	0 —	12 0 0			



The above table, as stated, was published in London in 1833, and therefore shows the prices of the shares at that time. The stock in all the companies had been paid for, either in full or to a large amount, showing that their business did not fail for want of expected funds; and yet, of these seventeen mining establishments, all of which went into operation, it appears that only three had received a single penny of returns. The aggregate amount of cash paid for these shares was enormous. Thus, the capital of the United Mexican was \$6,000,000, and the Anglo-Mexican \$7,000,000; and yet the table, for both, shows only a blank for returns.

The history of these companies, and especially the blanks in the above table, are a sufficiently serious commentary on the high expectations in which the stockholders in mining companies have always, and in every country, indulged. A man who buys stock in a cotton factory is contented, provided he gets a fair return for his money, for he expects nothing more; but he who pays his cash for mining stock, (especially if it is for silver and gold,) must first be convinced that the prospect is even more than fair for large returns. The reason is plain, for every one knows, or might know, that this has generally been the most uncertain of all investments; and yet, as some have made large fortunes by mining, with no better prospects, so others are willing to believe that present indications are equal to former ones, and no one can tell into whose hands

the next prize will fall. Thus men can everywhere be found, who, being eager for sudden fortunes, are ready to risk, at least small sums, on the same principle that the gambler puts down his shilling for a throw ; if he loses, it is but little ; and if he wins, it may be much.

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## CHAPTER XXVIII.

### VALUE OF THE PRECIOUS METALS, COMPARED WITH THE EXPENSE OF OBTAINING THEM.

HAVING examined, as far as in our power, the history, methods of working, and statistics, of the principal gold and silver mines in the world, from the days of the Pharaohs down to the present time, we have come to the conclusion that no business in which men have been engaged, has paid, on an average, so poor returns as that of mining for the precious metals. It is true that, during those remote periods of history, when nations were in bondage to their chiefs, labor was considered of little value, whether in the mines or in the field. But with respect to the hardships to be endured, that of working in the mines has ever been considered, of all employments, the most cruel and destructive to human life, even down nearly to the present time. And yet it is most probable that, if we estimate human labor and suffering at a penny a

day for each man, from the time of the Pharaohs down to that of imperial Rome, the amount gained would not pay for the time thus employed.

(By mines, we here mean places where the precious metals are sought, whether on or beneath the surface. The distinction between *excavated* and *surface* mines, is sufficiently obvious from the terms ; but it must not be understood that the latter is confined strictly to the surface, the soil being moved with spades to the depth of two or three, or sometimes fifteen or twenty feet, for the purpose of finding the gold, which is the only metal, except platinum, obtained by this sort of mining.)

It is true, that the above conjecture is hazarded without authenticated statistics, in regard to the quantity of the precious metals obtained, and the number of people employed in working the mines by the ancient Egyptians, and other eastern nations. But we have the historical fact that, for ages, and even down to our times, all the Egyptian princes held their people as vassals, whose labor, when required, was the rightful property of the crown. The construction of the Lake Mœris, where thousands died of continued labor and starvation, without even a promise of compensation, is an example of the power and sympathy of the thrones of that period. We know, also, that the eastern princes possessed large quantities of gold in early times ; and, from analogy, there is, then, no probability that its cost was more than the pittance of food given the miserable slaves, who worked day and night for those sovereigns,

and by which they were enabled to leave such enduring monuments of their riches, power, and glory, as still to excite the wonder of the world.

Whoever, in reading the history of ancient eastern nations, considered the thirst that all men have had for gold, will, we think, conclude with us, that the thousands who wrought in the mines for centuries, did not, on the average, produce a sufficient amount of gold to pay a penny a day for the labor.

If we examine the results of the almost universal golden mania, which continued for many years during the 12th century, and of which we have given some account, it will be found that, although vast sums were expended in searching for and extracting the precious metals, yet the quantity actually produced did no more than supply the place of that which was lost by use and abrasion, during the same time. Thus, while it is true that the quantity of gold and silver in Europe was kept from diminution by these operations, yet there was an immense loss of labor and money to individuals, and so to the country, amounting to the excess of expenses over the products obtained.

But perhaps it may be argued that mining, like other arts, has so improved during the last century or two, that more certainty now exists than formerly, with respect to its prospects. But the history of the London companies, already detailed, is a sufficient reply to this suggestion ; for, if our readers will ascertain the amount paid for the stock of all these companies, and then com-

pare this with the dividends, as stated in the preceding table, they will find a loss of many millions, which the largest products of the mines that could be expected, or even hoped for, could not balance in half a century.

The richest silver mine in the world, for about half a century, was that of Potosi. This yielded in fifty-five years about \$120,000,000, being at the rate of upwards of two millions annually. In its vicinity it is stated that a large village was built, containing several thousand inhabitants, all, or most of whom, were employed in working the mines. One of the shafts of this mine, it is also stated, is nearly a mile in depth, beginning at the top of a mural precipice, and running below its base, with many outlets, or adits, one above the other, at the sides.

The products of Potosi, after the period we have stated, began to diminish, and after a few years yielded only \$500,000 per year, instead of two millions. Whether or not it is entirely deserted at the present time we are not informed; but we infer from the accounts, that a large portion of the village must have been deserted for want of occupation; and also that the vast sums expended in excavating this mountain, which is said to be pierced in all directions, were in a measure lost, as the mines became exhausted of its ore. Whether, in the result, the products of Potosi were sufficient to pay all its expenses for sixty or seventy years, we have no means of knowing.

But we will end these speculations on silver mines, by giving the statistics of the Himmelsfurst, said to be the richest in Saxony. The Saxon mines have been worked ever since the twelfth century, and it is agreed that none are conducted with so much science, skill and economy, as these.

Miners employed, . . . . .	700
Working under ground, . . . . .	500
Horses employed, . . . . .	50
Total returns, annually, . . . . .	\$90,000
Cost per annum, . . . . .	\$72,200
Profits do., . . . . .	\$17,800

Average cost of labor, thirty-four cents per day. Here we see a mine conducted on the experience of ages, aided by the German science and economy of the present day ; together with a rate of wages for underground work only equal to one third what we pay to common laborers, and yet the profits are small when compared with almost any other kind of business conducted with equal skill and economy. In no part of our country would the products of this mine pay for the labor and expense of working.

*Conclusions on the subjects of Silver Mines.* It is not intended by the above statistics and remarks, that the reader should conclude that many large individual fortunes have not been made by mining for the precious metals. On the contrary, great numbers of Spanish families acquired immense wealth by this means. In most of these cases, however, it must be remembered that little or nothing was paid for labor

in the mines, over the daily, and often very cheap and scanty, food of the natives. Besides, these returns were often the fruits of labor begun by the ancestors of those into whose hands they fell. For, it must be understood, that in Mexico mines have often been opened, which, though worked for half a century or more, yielded no profit; and yet the same mine, owing to the discovery of a new vein, has produced for the next generation large fortunes. Now such instances are only illustrations of the uncertain products of all mining districts. During one period there are large accumulations of silver and gold, while during another, little or nothing is gained, the poverty of the mine requiring the expenditure of all that had been acquired, until it was found that the metal had cost more than its market value.

If any of our readers will point out to the author an instance in any country, where the average value of the precious metal has exceeded the average value of the labor of extracting it from the mine, where labor has been paid for, for a long series of years, he will acknowledge a new feature in mining which he has not heretofore discovered; and yet it is not certain that the Ural mountains will not produce such an instance.

## CHAPTER XXIX.

## ESTIMATED EXPENSES OF OUTFITS FROM THE UNITED STATES TO CALIFORNIA.

Our printer warns us that we have no time for an elaborate contrast between the products of agricultural labor and those of mining for the precious metals, either with respect to the morality or wealth of a nation or community. And yet we cannot in conscience end this little work without offering a few rough estimates in regard to the time and money which the thirst for Californian gold is, at least for awhile, likely to deprive the United States; for, as yet, that region of gold must be considered a foreign country.

*Loss of Labor.* The number of persons who have sailed or marched for California, during the last three months, ending the first of March, is estimated at twelve thousand; the number of ships or other vessels at one hundred and fifty, making an average of eighty persons to each vessel. In addition to these, there are now up for the gold regions, according to the New York papers, about forty vessels in different parts of the country, and the probability is that as many more will be offered, since the mania in some parts of the country is said to be greatly on the increase. It cannot, therefore, be considered a high estimate, if



we suppose that by the first of May two hundred and fifty vessels and twenty thousand persons will have sailed for California.

Now these persons, nearly to an individual, are young men in the prime and vigor of life, and most of them capable of enduring the ordinary fatigues of daily labor in the field, in the shop of the mechanic, or in the store of the merchant; otherwise they would be unfit for the enterprise. Their time, then, at home, could not have been worth less than fifty cents per day, on the average, besides their board. Here, then, we have the sum of \$10,000 per day for the loss of labor alone. With respect to the time, the outfits we believe have not been made for less than two years, nor would it be wise to undertake such a voyage for a shorter period, since nearly one half this time will be employed in going and returning. We have therefore the following estimates as to the value of time.

Twenty thousand persons at 50 cts. per day, . . . . .	\$10,000
Two years, Sundays excepted, 626 days, . . . . .	\$6,260,000

*Outfits.* With respect to the cost of the voyage, we may estimate \$300 to each person to be within the average. Many of the personal outfits amount to twice this sum, and perhaps a few come within \$250. In this it is intended to include all extra articles, and which would not have been used at home, as Colt's revolvers, rifles, India rubber beds, and extra clothing, together with provision for the voyage. Many of the companies own the ships in which they sail, but the price of

these does not come within our estimate, since they may return or be sold at cost during the absence of the owners, and therefore may constitute property which will not be expended. We have, then, the following items of expense for outfits, viz :

Vessels 250, each 80 persons, . . . . .	20,000
Outfit for each person, \$300, . . . . .	\$6,000,000
Loss of Labor at 50 cts. per day, . . . . .	\$6,260,000
Total for loss of labor and outfits, . . . . .	\$12,260,000

(It may be observed that we have made no distinction between those who ship for Panama, and those who sail for San Francisco by way of Cape Horn, since the outfits, we believe, are the same.)

*Subsistence in California.* Having thus estimated the costs of transportation, our next item must be the expenses of subsistence for each individual while there. We will suppose that the expense of clothing for the two years is embraced in the \$300 outfit. . But this sum cannot be expected to pay the subsistence in addition to the items we have enumerated. It is true, that some of the associations have very judiciously, we understand, taken along with them provisions for a year, but this, we are also informed, is an extra item, and if so, should be taken into the general account of subsistence, upon their arrival.

Now, as it is intended that these estimates shall fall below the real expenses, we will allow only at the rate of \$300 a year for each man, commencing at the time of his arrival at the gold regions, and ending on his

departure for home. The time we will suppose to be one year, because the first six months' subsistence has already been included in the outfit, and the last we will suppose to be occupied on the return voyage. We have thus subsistence for twenty thousand men, one year, at \$300 each, \$6,000,000.

The closing item is the expense of the return voyage, which at the end of two years, owing to the arrangements of the government, and the establishment of lines of packets, will undoubtedly be one third cheaper than at present. We shall, therefore, estimate this at \$200, including subsistence.

Return voyage, 20,000 men, at \$200 each, . . . . .	\$4,000,000
For subsistence one year, and return, . . . . .	\$10,000,000

It will be observed that we have allowed six months for the outward voyage, and as many for the return. This we have done for the convenience of estimating in round numbers; but according to the manner of making the estimates, it makes no difference in the expenses, though it may shorten the time of working at the mines.

It may be noticed, also, that these estimates are founded on vessels which are expected to make the entire voyage by sea, and not by Panama. The latter route, while it costs more, because provisions cannot be transported across the isthmus, still is made in less time, so that, on the whole, we have thought the average already stated would fall within the truth for both routes. The aggregate is as follows:

Twenty thousand persons at 50 cts. per day, . . . . .	\$10,000
Two years, Sundays excepted, 626 days $\times$ 10,000, . . . . .	6,260,000
Outfit for 20,000 persons at \$300 each, . . . . .	6,000,000
Subsistence for 20,000 men for one year at \$300 each, . . . . .	6,000,000
Return voyage of 20,000, at \$200 each, . . . . .	4,000,000
Total amount, . . . . .	\$22,260,000

Having shown these estimates to several friends personally concerned in outfits and adventures for California, and who, although expressing astonishment at the result, could not deduct from the items, we offer them as no exaggerated summary of the expenses of our gold-seeking enterprise.

But in addition to this sum, the amount of specie already sent to San Francisco, either for the purchase of native gold, or other commercial purposes, is said already to be equal to \$500,000, and it is estimated that this sum will be doubled during the present Spring, thus making \$1,000,000 in coin to be circulated, as an addition to the enormous quantities of precious metal already existing in that region. This money is no doubt highly necessary for the transaction of business in that country, where, for the want of a circulating medium of known value, great frauds are said to be common.

The export of this coin from the country, although it is said to have affected the money market unfavorably, is a commercial transaction, which does not come within the design of our estimates; the probability of rich returns into the hands of those who have gone into this branch of business, affording a fair prospect of satisfactory remuneration.

**CONCLUSION.** It has been the design of the above estimates to show what amount the people of the United States will have appropriated by the first of May, 1849, for Californian gold, and if we have made no false calculations, the total sum is upwards of twenty-two millions of dollars. This sum, therefore, must be subtracted from the amount of gold brought from that country, before any average returns to the people of the United States can be realized. After we have received \$22,260,000 in California gold, then the profits on our expenditures will commence, but not before. On the result, we must avoid expressing any opinion, leaving those who read this book to form their own.

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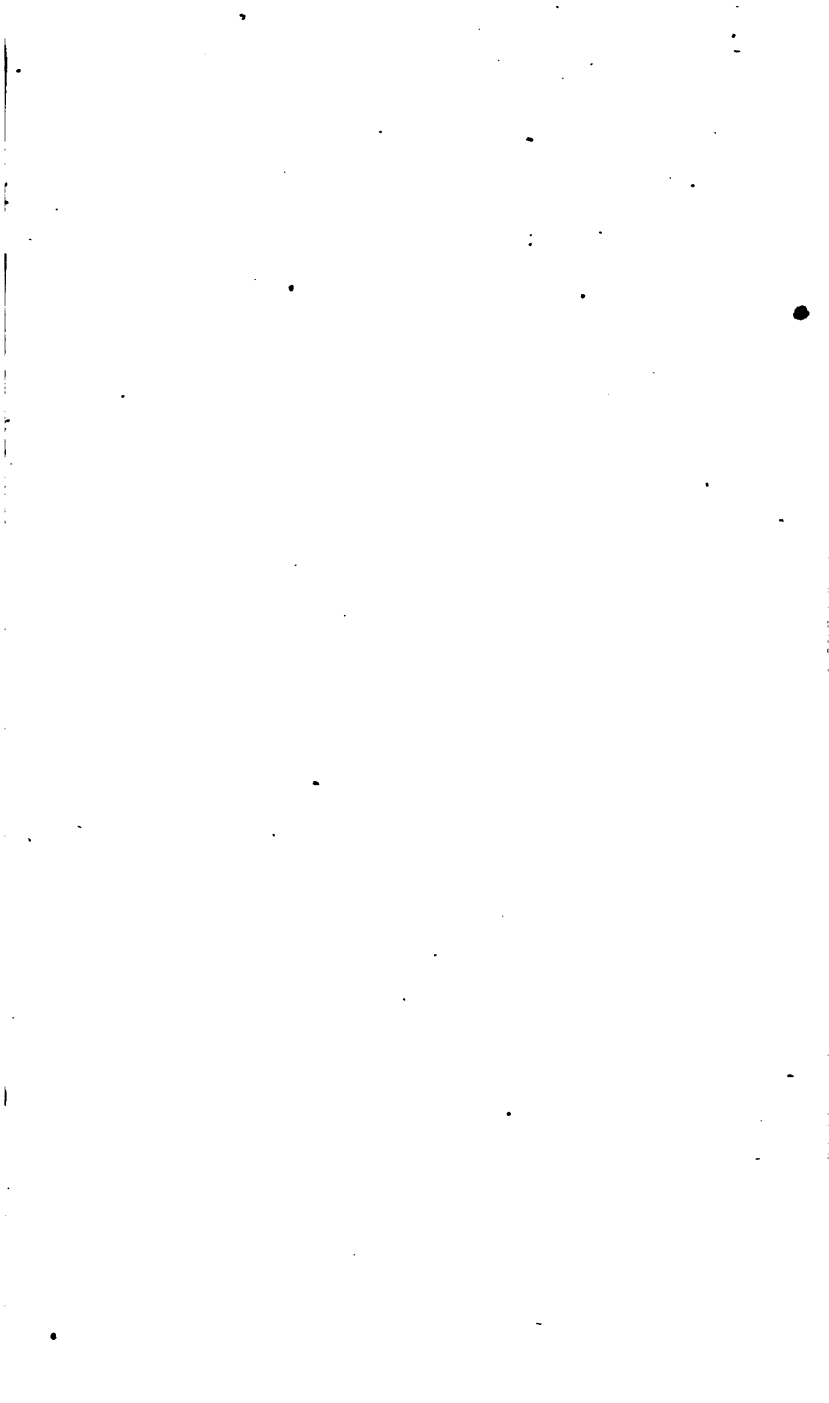
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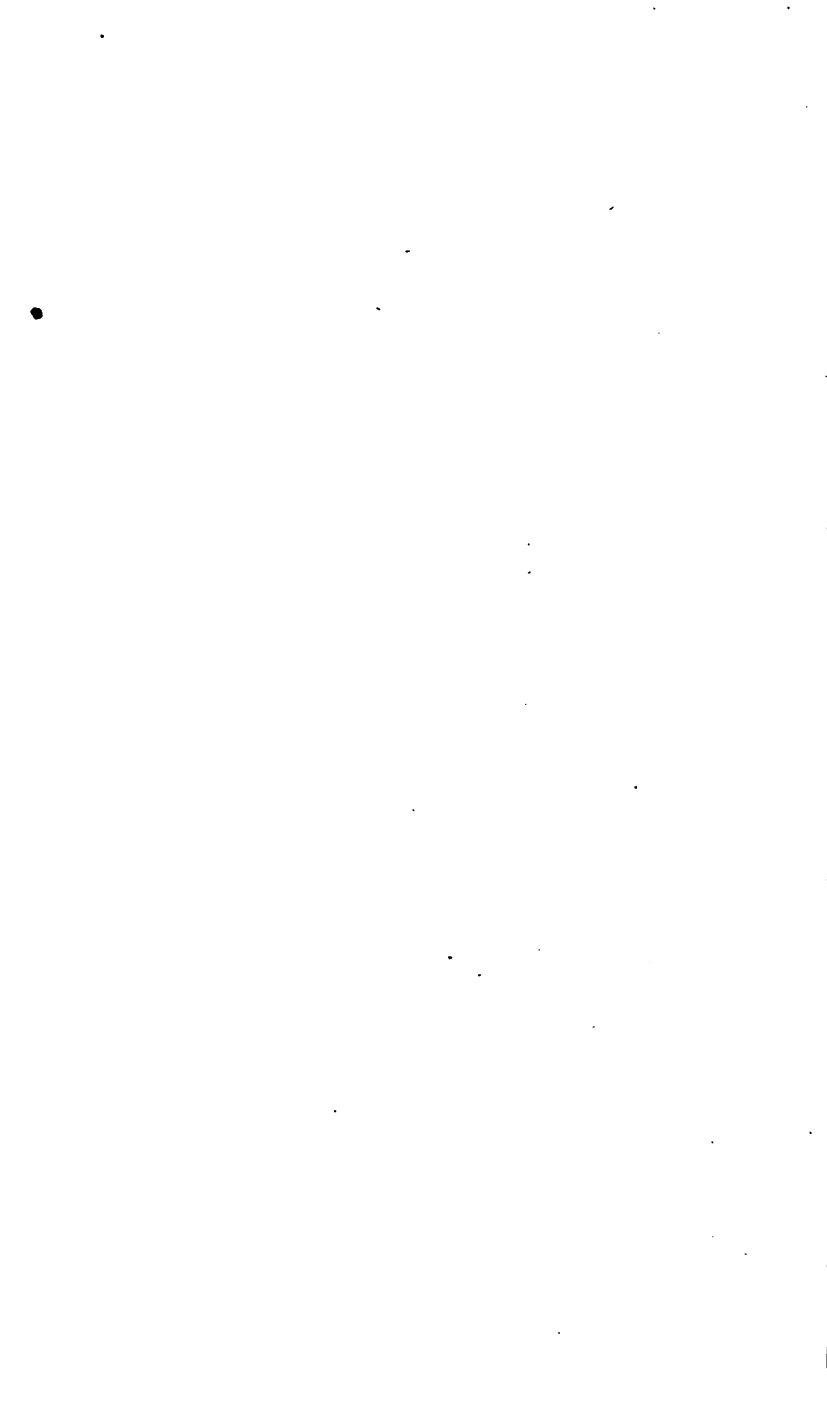
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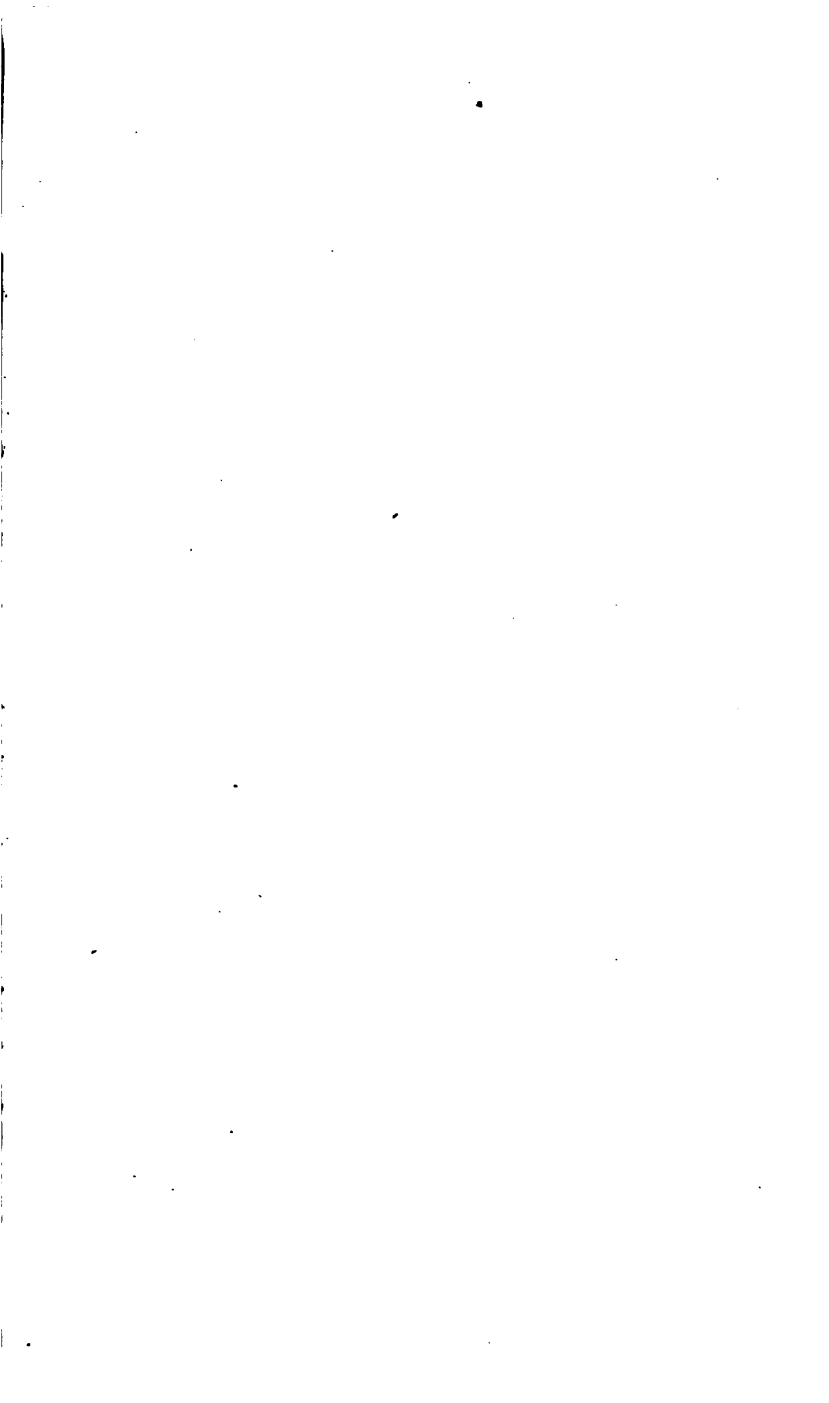
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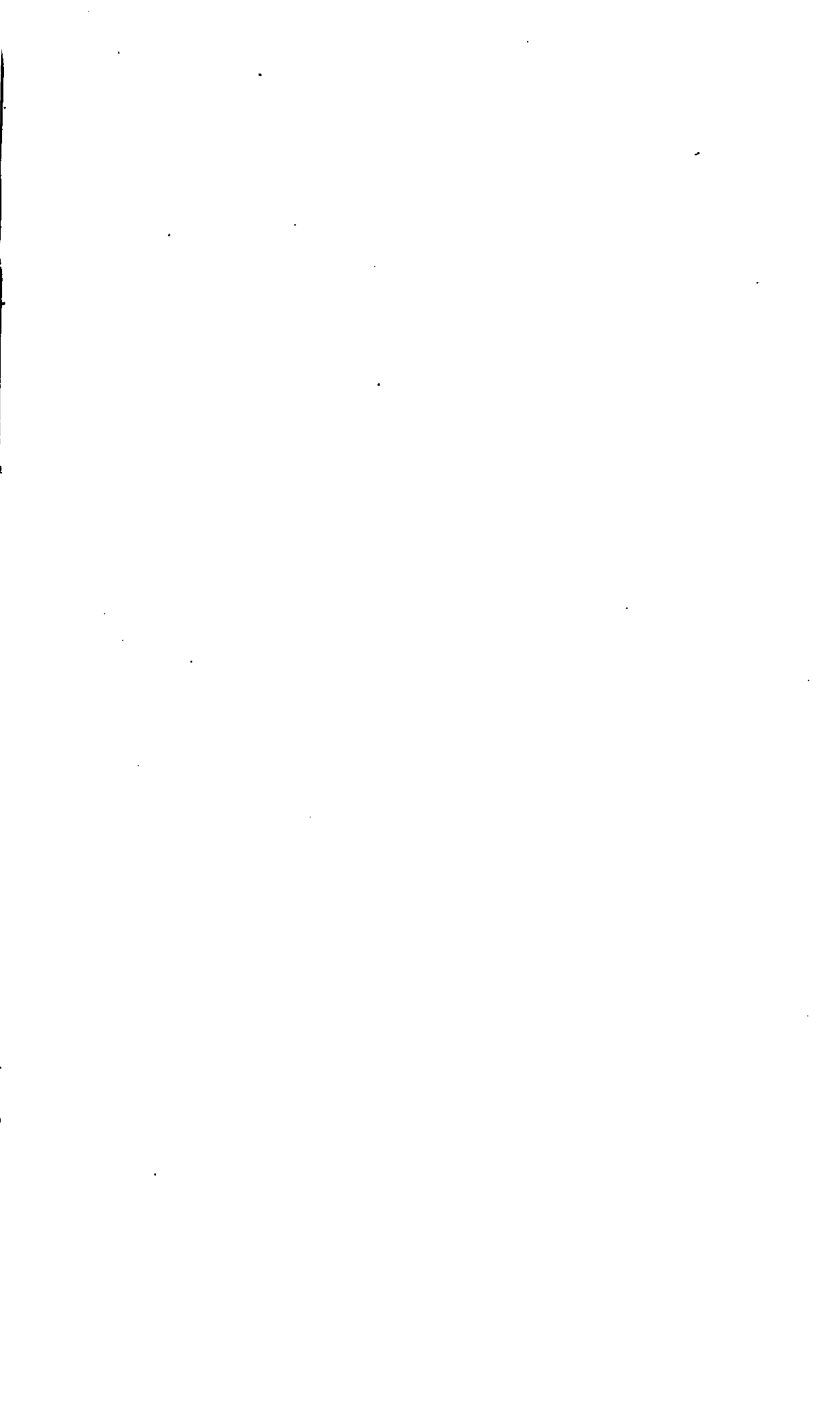
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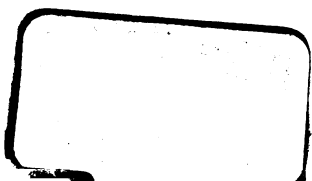




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